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السودان في رسائل ومذكرات

Sudan Notes and Records.

Vol. XXIX, 1948.

PART II.

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LIST OF CONTENTS.

PAGE

EDITORIAL NOTES . . . . . iii.

ARTICLES.

The Kingdom of Tegali : J. W. KENRICK 143
Notes on the Death of a Reth of the Shilluk : W. P. G. THOMSON . 151
Birds Causing Crop Damage in the Sudan : C. E. WILSON 161
The Age-Set System and the Institution of Nak among the Nuer : P. P. HOWELL 173
The Birth of a Leper Settlement : A. CRUICKSHANK 183
Large Land Snails of the Sudan : J. D. TOTHILL 189

NOTES.

Ancient Monuments of the Sudan : O. H. MYERS 206
Early References to Malaria near Dongola : D. J. LEWIS 218
A Trial Economic Survey in Amadi District : G. R. STANIFORTH . . 221
Adult Education amongst Country Women : G. E. RICHARDS . . 225
Report of the Philosophical Society of the Sudan for 1946/7 and 1947/8. 228

LIST OF RECENT BOOKS AND ARTICLES OF INTEREST TO SUDAN READERS. 233

REVIEWS.

Grammatichetta Giur : S. SANTANDREA 237
The Christian Approach to Islam : J. S. TRIMMINGHAM 238

CORRESPONDENCE.

" The rocks " of Nero's centurions : F. D. CORFIELD . . . 240

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SUDAN NOTES AND RECORDS

FOUNDED 1918.

السودان في رسائل ومدونات

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An Index of the first twenty volumes, compiled by Mr. F. Addison, is printed at the end of Vol. XXI (1938) Part II.

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Transliteration of the Arabic Alphabet

adopted by the Editors of *Sudan Notes and Records*

ا	at beginning of word omit, hamza (')	ذ	dh (coll. d)	غ	gh
	elsewhere	ر	r	ف	f
		ز	z	ق	q (coll. g)
ب	b	س	s	ك	k
ت	t	ش	sh	ل	l
ث	th (coll. t or s)	ص	ṣ	م	m
ج	j or g	ض	ḍ	ن	n
ح	ḥ	ط	ṭ	ه	h
خ	kh	ظ	ẓ	و	w
د	d	ع	'	ي	y

VOWELS.				DIPHTHONGS.
fatḥa	a,	lengthened	ā	ى—ai (as in aisle).
kasra	i,	„	ī	و—au (as in mauser).
ḍamma	u,	„	ū	

The ل of the article always remains *l*.

The silent *t* (ة) is omitted.

NOTES.

1. The system is not applied to well-known names, such as Khartoum, Omdurman, etc.

2. The vowel sounds of *e* in "get" and *o* in "hot" with the corresponding long vowels (*a* in "gate" and *o* in "home"), which occur only in the colloquial, are expressed by e, o, ē, ō.

e.g. beled, Moḥammed, bēt (or beit), ḥōsh.

Ei may be used as alternative to show the long ē.

EDITORIAL NOTES

READERS of this Journal will have noticed an innovation in Part I of the current volume, namely the printing of the title in Arabic as well as English. This is a token of our wish to encourage Sudanese readers and contributors. In the Arabic rendering the form of the title has been slightly recast in the interests of euphony : a literal retranslation into English would be " The Sudan in Notes and Records."

For the sake of international circulation the Journal must continue to be published in English, but a group of interested Sudanese is studying the possibility of extending its value to the Arabic-speaking public. They propose to publish a series of books in Arabic containing articles or extracts from past volumes. It is hoped that this might also stimulate contributions from Sudanese, who often have access to historical or sociological material of great value.

A new feature in this number is a list of recent books and articles relating directly or indirectly to the Sudan. We hope to publish a similar bibliographical note at least once a year, in addition to the usual reviews of the more important publications. Whilst a few items have been included from earlier years, no attempt has been made in general to go back further than 1947 and even so the list is doubtless far from complete at present. We would welcome the cooperation of our readers in pointing out omissions, especially of articles in scientific and technical journals. It is hoped that these lists may facilitate future researches. In this connection we may deplore the absence of a Sudan Government Stationery Office or of any convenient means for ascertaining what Government publications are issued from the various sources in the Sudan.

* * *

It is learnt from Professor Tucker that he is now working on Vol. II of *The Eastern Sudanic Languages* and hopes to have it ready for the printer by the end of the year. This volume will deal exclusively with the Bongo-Bagirmi group of languages.

* * *

We publish in this number the brief record of a " sample survey " made in the Moru tribe of Equatoria Province. As far as we are aware this is the first published record of any such survey made in the Sudan.

It is understood that a census of the population of the Sudan may be attempted in the not too distant future. But even if this is carried out, there will still be an almost complete lack of scientific information on how the bulk of the people really live, especially in the economic sphere. The obstacles to censuses and surveys are many—suspicion, religious scruple, private interest, inertia, to name only a few, whilst casual private observation is easily distorted. The need for accurate records and statistics is now becoming greater than ever and if there are unpublished investigations on these lines in existence, the Editors will be very glad to hear of them. It is also to be hoped that the growing numbers of Gordon College students will be encouraged to take an interest in such things.

* * *

Whilst this Journal does not set out to chronicle current affairs as such, we feel that passing mention must be made of the prospective setting up at the end of 1948 of the new Executive Council and Legislative Assembly, with all that this may bring for the future of the Sudan. We hope that the people's representatives may be fully conscious of the value of the Arts and Sciences which this Journal tries in its own way to serve. We hope in our next number to publish a paper on the difficult problem of communications in the Sudan, and that this may be followed by other studies of national problems.

* * *

We heartily concur with the hope expressed by the reviewer of Mekki Eff. Shebeika's history of the Sudan, that he will consider bringing out an English edition. Apart from Sir Harold Macmichael's survey, which is limited in various aspects, no general history has been written in English in recent years, and there is great need of one. But one may suggest that if any such venture is attempted, it should survey Sudan history as a whole, and not fall into the error, so common amongst the majority, of thinking of that history as virtually beginning with the conquests of Mohammed Ali, or perhaps in a vague way with the Kingdom of Sennar. A much better perspective view of the country might be obtained by considering the history of the Nile Valley and its surrounding lands from the earliest times, a task for which we now

have a considerable body of material, and the Sudanese would benefit if they could hear in the schools something of their history beyond the last hundred years.

* * *

A kindly (we hope !) reviewer of Volume XXVIII in the *Sudan Star* has suggested that our predecessor erred in advocating the building of a proper museum as an urgent measure for education and for preservation of Sudan antiquities. The relative value of museums and other things is a matter of opinion, and we leave our readers to form their own. But the same reviewer argues that attempts to widen the circulation of this Journal are doomed to failure unless it becomes much more " popular " in its appeal, so as to attract those not interested in learned articles. There is some truth in this, but we prefer to try to maintain a high scientific level on the whole, looking to the growth of the educated element in the Sudan to supply both contributors and readers. A greater difficulty is the present almost too wide range of subjects covered which may cause boredom or disappointment to readers who find perhaps only one item of interest in a whole volume, and much that they would do without. But this seems to be inevitable until it becomes possible to publish specialised parts or two different Journals.

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TABLE OF CONTENTS.

PAGE

EDITORIAL NOTES . . . . . iii.

ARTICLES.

The Kingdom of Tegali : J. W. KENRICK 143
Notes on the Death of a Reth of the Shilluk : W. P. G. THOMSON . 151
Birds Causing Crop Damage in the Sudan : C. E. WILSON 161
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LIST OF RECENT BOOKS AND ARTICLES OF INTEREST TO SUDAN READERS. 233

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SUDAN NOTES AND RECORDS

Vol. XXIX Part. II. 1948

THE KINGDOM OF TEGALI, 1921-1946

By J. W. Kenrick.

In his article " The Kingdom of Tegali " (*Sudan Notes and Records*, Vol. XVIII, Part I) R. J. Elles wrote of the advent of government inspectors, " Thus did the Kingdom of Tegali lose the independence which it had retained for 350 years, even during its century of nominal subjection to the Fung."

Disrupted by the Mahdia to such an extent that only a small portion in the north remained in the dominion of Mek Geili, the process of disintegration was carried still further under the first British inspectors, who cut off and administered separately Tukam and Moreib, half Balula, Um Talha and Turjok. When Geili died in 1916 he had nominal power only in and around the Kajakja Hills and half Balula.

Speaking of the accession in 1921 of the 19th and present King of Tegali, Mek Adam Geili, Elles wrote :—

" His accession seems a suitable point to leave the chronicle of Tegali, for more recent events cannot yet be commented on. We may however note that for the last few years the Government has pursued a policy of piecing together the broken fragments of the old kingdom and restoring the authority of the hereditary ruler." It is as the ' inspector ' who saw the end of this restoration and witnessed the metamorphosis of Tegali from a species of ' empire ' to a Rural District Council in January 1947 that I take up the chronicle of Tegali where Elles had to leave it.

Empires can be of two kinds. Either they are highly centralized, permeated by the will of a directing brain, that of a single dominant personality or of a small clique or group, or they are of the loose-knit commonwealth type consisting of diverse largely autonomous units held together by some common tradition and certain common interests.

The men who set out, in Elles' phrase " to piece together the broken fragments of the old kingdom " were forced by circumstances to create an ' empire ' of the second kind. Mek Adam Geili himself was not the forceful dictator. The " broken pieces " were of the most diverse types, comprising Arab Baggara tribes, arabicized Nuba, ex-slave settlements, settled westerners and pure pagan Nuba groups. Moreover, the area stretched far from north to south (230 miles), and communications during the rains were at the pace of a bull. The early administrators saw that the only possible method was to proceed slowly, grafting from the north southwards, and allowing the broken pieces to grow together assisted by two main influences, common economic interests (which already existed) and the old tradition of the Tegali crown, which was very real in the north but became weaker in proportion to the distance travelled southwards.

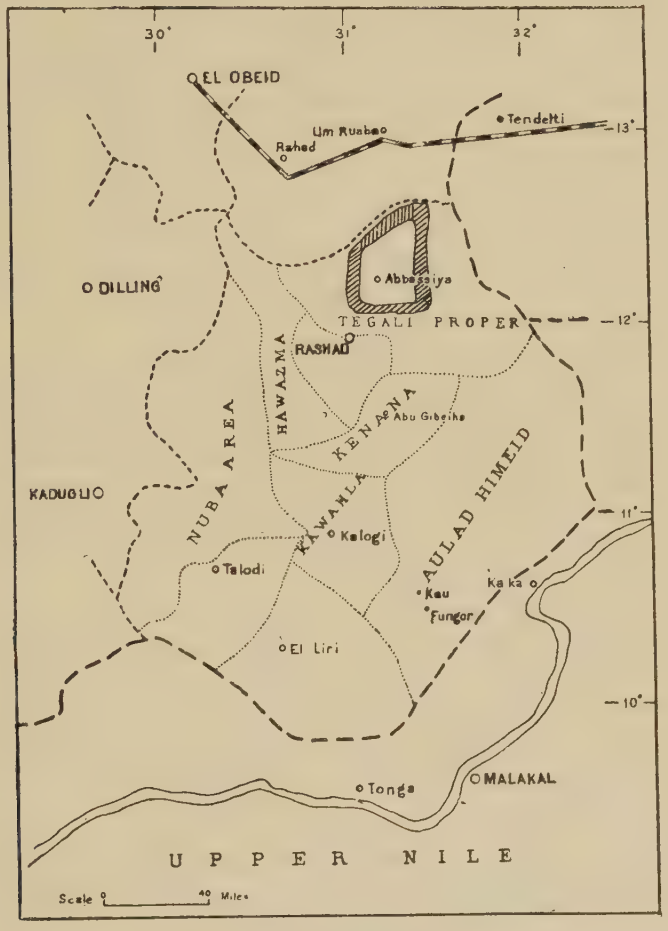
The essential prerequisite that all the pieces should be within a single administrative district was fortunately supplied on April 1st 1931, when Southern Kordofan District was broken up and the Talodi Subdistrict added to Eastern Jebels District. Thereafter a common district headquarters, common judicial and taxation systems, frequent meetings of the heads of the various divisions, and the possibility for the Mek himself to visit even the most southerly of the areas once owing allegiance to his forbears, slowly but inevitably worked towards the same end, to bind the various parts into a greater whole without making them feel they were losing their local or tribal identities.

Such was the general programme, and this is how it was carried out. The first, apparently irrelevant step, on which however the historian must lay considerable emphasis, was the move of the Mek's capital in 1929 from Kiraia in the Kajākja Hills down to Abbassīya on the plain to the north east. This was made on the advice of the District Commissioner, because the old capital was unsuitable for economic development, and the move has been justified. A well laid out small market town has grown up with a thriving trade, and good communications to the east and south, and to the railway at Um Ruaba.

In the same year 1929, a motor road was opened from Rashad to Abbassīya direct, thus saving 35 miles on the former route. A Tegali Court was constituted under the presidency of the Mek with subordinate courts in various omodias. Thus the Mek was provided with an improved capital, improved communications to the south, and judicial powers, before any expansion was undertaken. [See Map I.]

This process began in 1930 when the two Kawāhla and one Kenāna omodias of Balūla, Abu Gereis and Um Tālha in the east were restored

to the Mek's jurisdiction. The kingdom received thereby an increase of population of some 4,100.



MAP I

In 1932 Moreib and Tukam came in with some 3,300 people, and in 1933 Turjok and Tagoi were added with some 2,500. With the exception of the Rashad mekship, the Tegali kingdom now comprised a compact little area bounded on the west by the Hawāzma, and on the south by the Aulad Himeid—Kenāna administration of Nazir Radi Kambāl. In 1934 it received a preliminary form of N.A. budget with a revenue of L.E. 1265, and the Mek began to bear some financial responsibility.

The next great step forward came in 1935, when Tegali acquired jurisdiction over the Rashad mekship and, more important, over Nazir Radi Kambāl's Aulād Himeid and Kenāna and the Kawāhla of Kalōgi who were under him. Rashad was an additional 7,800, but the latter brought in some 13,200 more people.

The incorporation of the Aulād Himeid administration was a fascinating diplomatic coup. Nazir Radi Kambāl was an able and not unambitious man, who had won high honours and had made a great local reputation. Moreover he was much older than Mek Adam. Nevertheless, thanks to his unselfishness and wisdom it was arranged that he should acknowledge the suzerainty of Mek Adam and pay his taxes into the latter's chest, that Mek Adam should delegate to him powers as his *wakil* in the Abu Gebeiha area, and that he should retain his considerable judicial powers.

This amalgamation was vital to all that was to follow. The area under discussion in this note could be divided politically and geographically roughly into two parts, from Rashad northwards and from Abu Gebeiha southwards. In the southern half Nazir Radi Kambāl was the dominant personality. Had he refused to bring himself and his tribe, and with them the Kalōgi people, into the Tegali kingdom it is doubtful whether the adherence of the Ellīri and Talōdi people would have been obtained later.

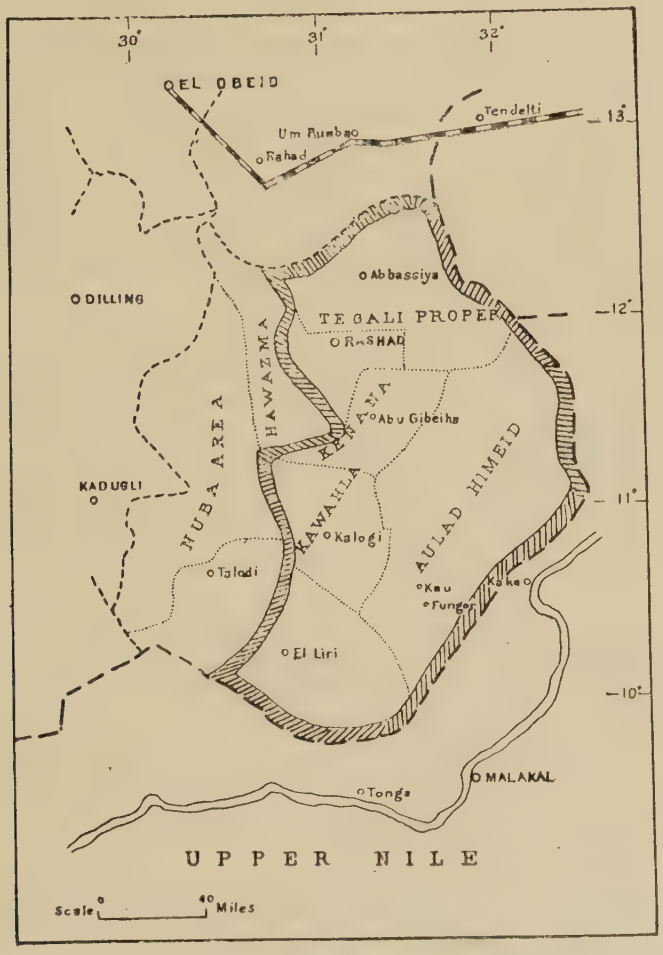
Once the Aulād Himeid and Kalōgi areas were joined to the kingdom, with the Grand Old Man working loyally with the Mek, it began to assume important stature. Its area was now some 12,000 square miles and its population some 47,000 souls. The N.A. imprest chest was promoted to the status of an independent budget with a revenue of some L.E. 3,500. The next two years were necessarily devoted to consolidation.

The list of the diverse peoples now once more within the jurisdiction of the kingdom of Tegali includes tribes as distinct from each other as Baggara Arabs (Kenāna, Kawāhla and Aulād Himeid), the arabicized Nuba of Rashad, westerners from Nigeria and beyond, and the pagan Nuba of the Kau-Nyaro hills.

In 1937 it was the turn of Nazir of Ellīri to be brought in. His people, lying due south of Kalōgi, had many connections with the Kawāhla, and many of them were of old Baggara Arab slave stock. This brought to Tegali three more omodias and ten Nuba sheikhships and extended the kingdom from the Gawāma'a boundary in the north down to the Upper Nile Province boundary north of Tonga. [See Map II.]

Six years now passed before any further amalgamations or additions

to Tegali were made. This was partly due to administrative pre-occupations during the early part of the war, and partly to the need for a period of organization and consolidation, during which the sub-unit courts were fitted into a single court system with the Mek's court at the apex. Sub-chests were created in the various *gisms*, as the sub-units have come to be called, and economic and administrative ties were fostered and strengthened.



MAP II

Nevertheless it was possible to get the Hawāzma Halāfa to join

Tegali in 1943, bringing in four *omodias* who paid some L.E. 1600 tribute annually. Shortly afterwards an innovation in line with developments in other parts of the Sudan was introduced. The heads of *gisms*, with a few of the more important omdas and a merchant representative from the market town of Abbassiya began to meet together at regular intervals under the chairmanship of the Mek (with the District Commissioner as advisor) forming an unofficial council for the Tegali Administration.

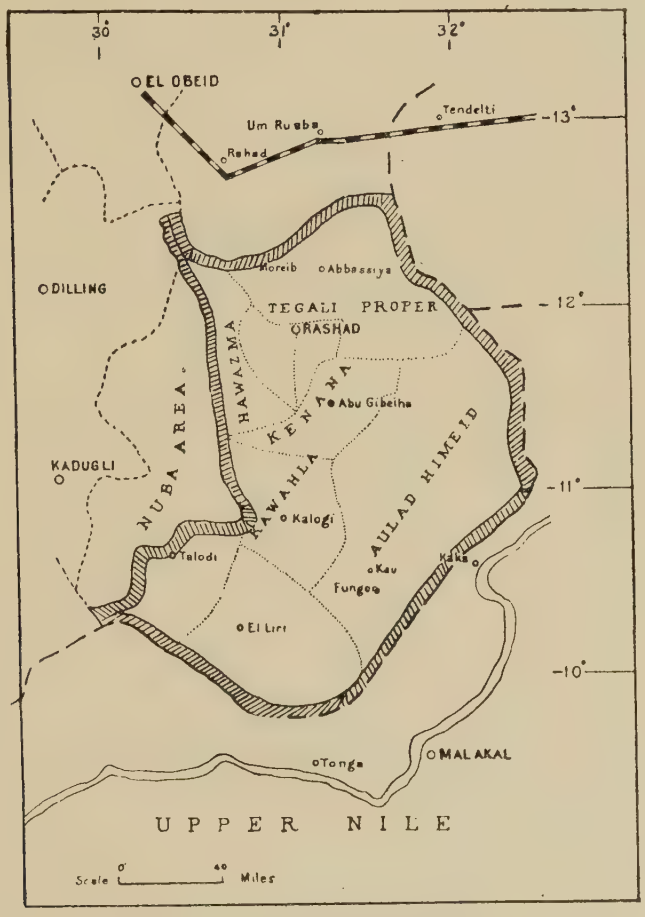
Finally, in 1945, Talodi Omodia was brought into Tegali, and the kingdom now covered the whole of Eastern Jebels District with the exception of the purely Nuba groups, running down the west side from the Koalīb at Delāmi to the Korōngō in the far south of the District. These had their own separate administrations and were amalgamated with western Jebels District in April 1947. The kingdom's budget now balanced at some L.E. 15,000, and it comprised some 140,000 people in an area of some 15,000 square miles. Elles' " broken fragments " had been pieced together over a period of 24 years. [See Map III].

The administrative and judicial set-up of the kingdom governed by tribal division and geographical accident was remarkably symmetrical. It was divided administratively into two *idara* and subdivided into seven *gisms*. The northern *idara* consisted of three *gisms*, those of Tegali proper, the Hawāzma, and the Rashad — Tagoi — Turjok group. The Mek's brother and *wazir* Sheikh Hag el Tāhir Geili was his *wakil* for this *idara*. The southern *idara* consisted of the remaining four *gisms* of the Aulad Himeid — Kenāna, the Kalōgi Kawāhla, Ellīri and Talōdi Omodia. The Mek's *wakil* for this area was Nazir Rādi Kambāl.

Judicially the framework was similar. Appeals from *gism* courts went, in the first instance, to the courts of the heads of the two *idara*. Appeals from their decisions could be taken to the Mek himself, as president of the Tegali Court.

Administratively and judicially each *wakil* was responsible for touring and coordinating the *gisms* in his *idara*. From time to time the Mek himself made a tour or ' progress ' through his dominions to show himself, hear complaints and give advice, With his council, and the system of administrative devolution down to and through heads of *gisms* already described, his position resembled that of a constitutional, rather than a despotic monarch. This rôle suited the personality and inclination of Mek Adam, who prefers the giving of council and advice to executive action. In fact, in 1946 he tried to resign in order to retire to a quiet private life. This move produced an interesting reaction

from the members of the Administration. The Mek's son was not yet old enough to take his father's place, and none of his brothers commanded the necessary support throughout Tegali. He was therefore constrained by the unanimous exhortations of all the various tribal heads to continue in office. His own personal position was confirmed and



MAP III

strengthened thereby ; more significant, it was proved that the unifying effect of the tradition of the Tegali Mekship and the amalgamations which had been made over the last 25 years to restore the territorial unity which that tradition represented, were appreciated by the diverse elements of which the Kingdom was composed.

A radical change now ensued. No sooner had the Government successfully completed its "policy of piecing together the broken fragments of the old kingdom and restoring the authority of its hereditary ruler" than it transformed the kingdom into a warranted Rural District Council in 1947. The powers granted to the new council were considerably greater than those of the old kingdom.

This is an example of how political thought in the Sudan has changed or developed since the early 1920's. But so democratic in trend was the rebuilding of the Tegali Kingdom and the restoration of "the authority of the hereditary ruler," and so well did this combine with the character and outlook of the hereditary ruler himself, that the change from kingdom to Rural District Council, which became legal on January 1st 1947, was made with the minimum of dislocation.

As already described, during the last three years an unofficial 'council' had been operating at the head of the affairs, during which time experience was being gained on council and committee procedure, and it was a simple matter of adjustment to form a Rural District Council. This consisted, to begin with, of a main element of tribal representatives nominated by the Governor, three members representing outside interests, also nominated by the Governor, and a commercial element elected by the business interests of the three chief market towns of Abbassīya, Rashād and Talōdi.

Mek Adam seized this chance to relinquish his nominal control of affairs by refusing to serve as chairman, and the Council thereupon itself suggested that he and his heirs, as Meks of Tegali, should by virtue of their tradition provide the only *ex-oficio* member of the Rural District Council. They then elected his brother, Sheikh Hag el Tāhir Geili, head of the northern *idara*, to be Vice-chairman, and decided that the District Commissioner, at least for the early years of the new Council, should be chairman. The administrative set-up, as already described, remained unchanged, the area being still divided into two *īdaras* and seven *gisms*.

Founded in the 16th Century, reaching its zenith in the 19th, disrupted by the Mahdia, and rebuilt by the present Government in the 20th Century, the Kingdom of Tegali has now ceased to exist. It is not however dead; rather has it undergone a natural metamorphosis in line with modern trends in the Sudan.

FURTHER NOTES ON THE DEATH OF A RETH OF THE SHILLUK (1945)

By W. P. G. Thomson.

These notes are intended to amplify the article "The Death of a *Reth* of the Shilluk and the Installation of his Successor" by Mr. P. P. Howell and myself published in *Sudan Notes & Records* Vol. XXVII, 1946.

No attempt is made to describe the ceremonies in full. The general pattern followed that of 1944 and these notes are chiefly concerned with the differences observed on this occasion, and the reasons given by the Shilluk for these differences. It was interesting to observe that in several cases where points of ceremonial differed, the procedure reverted to that of January 1918 described by Munro in *Sudan Notes & Records* Vol. I, 1918.

The disposal of the Body and Soul of Reth Anei.

The course of events was as follows:—

Reth Anei Kur died on November 10th 1945. He had been ill for some days, apparently from an attack of relapsing fever, which was prevalent among the Shilluk at the time; he was known to have a bad heart, and had in fact had a heart attack some months previously in Malakal hospital. A Shilluk medical assistant, present at Fashoda at the time of the *reth's* death, reported that he died in his arms of heart failure. This is as good evidence as we are likely to obtain that *reth* Anei died a natural death.

I was invited, as in 1943, to pay my last respects to the corpse. This I did on November 11th, and the scene was similar to that of 1943, but simpler. The corpse was fanned by sisters of the *reth*, and his wives were not in the house with the corpse. Several were observed outside. The reed mats were not so elaborate as in 1943 and there were no cloth curtains.

The corpse was not immediately buried, as happened in 1943, but was taken on the night of 11.11.45 to a small hamlet belonging to the village of Fadwol, (the village of the Bang Reth Kur — slaves of *reth* Kur, the father of Anei) some three quarters of a mile from Fashoda, and sealed up in a hut. These proceedings were naturally secret, and I was not invited to enquire into details. This method of disposing of the corpse was a reversion to tradition: there is no evidence that a

maiden was sealed up alive in the hut along with the corpse, which is also said to be traditional.

Fafiti Yor died in September 1943, and his funeral dance was held in November. Anei Kur died in November 1945, and his funeral dance was not held until October 1946. This longer interval was also more in accord with Shilluk custom, which holds that there should be an interval of about a year between the death of a *reth* and the installation of a successor. The installation ceremonies should follow quickly upon the funeral dance for the deceased, and should take place after the harvest is ripe.

Two days before the dance, the remains of *reth* Anei were brought secretly, and by night, from Fadwol to Golbainy where his private village had been, and were buried in his house. The remains were brought by Ororo under the supervision of Gol Nyidhok, the descendants of Nyidhok, the grand father of Anei. The dance took place there and only occupied two days. It was less well attended, and the contingents not so well marshalled as in 1943, but the essential characteristics were the same, and there were the same arguments about how long it should last. The ceremonies were in the hands of the eldest son of the deceased, and of Kwanyireth Bol Acien, the chief of Lul, who had taken a large part in 1943. The chief of the Kwareth, who was senile in 1943, had died in the meantime, but his successor in office, a young man, took no part. The *reth* remained purposely in Fashoda, and did not come to Golbainy at all. It was noticed that, as bulls were slaughtered, the horns and tails were hung on to the palisade surrounding the house where *reth* Anei lay buried, and his cattle bells and other ornaments were displayed by *bangreth* in front of the tomb, spread out upon a bull skin.

The election of Reth Dak Fadiet.

On the death of *reth* Anei the electoral college were summoned, as in 1943, by Jago Tabo of Golbainy for Gol Dhiang and Jago Yorleiker of Kwom for Gol Nyikang, the two great ceremonial divisions of the Shilluk kingdom. The composition of the college was the same as in 1943, except that the chiefs of Bur Nyiliec and Owaliny Obwa could not attend owing to illness. It was clearer to me than before that the choice rests entirely with the chiefs of Gol Dhiang and Gol Nyikang. I doubt whether even the chief of the Kwareth has any influence : he and the other members of the college have only to listen to the decision.

Reth Anei had not lived long enough to adopt a *nyireth*, as *reth*

Fafiti had done. Opinion was decided that the succession lay with the sons of Fadiet, and as the electors gathered at Fashoda, so the sons of Fadiet left their homes and came within easy reach. This was a breach of tradition, which demands that all *nyireth* at such a time should remain quietly at home. It gave rise to certain fears among the chiefs that some *nyireth* might try to instal himself in vacant Fashoda by force. There was no evidence in the event that any *nyireth* had had such an intention.

The sons of Fadiet were not well known to the chiefs ; unlike the sons of Kur, they had a reputation for being quiet and unassertive. There was no obvious choice designated, as Anei had been designated by Fafiti. The two king-makers reduced the sons of Fadiet to a short list of four names, and waited for a lead from me, as they could not decide upon any one of these four. After my suggestion that Dak Fadiet of Falo, one of their short list, would be a good choice, the chiefs at once agreed to him. There had been rumours of bribery, as in 1917, and two bribes were known to have been offered to, and refused by, Jago Tabo of Golbainy, the chief of Gol Dhiang. One had been offered by *nyireth* Nyikang Kur, a " princess " of evil repute, who wished her uterine brother, a son of *reth* Fadiet, to succeed. It appeared from a discussion with the two kingmakers that bribery on such a solemn occasion would result in certain death for the recipient at the hands of Nyikang and was out of the question. This may be so, and would be a reasonable tribal sanction to ensure an unbiassed choice. There was a suggestion from the southern Shilluk, where most of the sons of Fadiet live, that the electoral college with its northern bias would choose a *reth* from the north. There was no sign of this, because it was agreed at once that a son of Fadiet must succeed, and no one of these sons lived north of Fashoda. The feeling in the south that the north has more influence in Fashoda probably arose because the lines of *reth* Yor and *reth* Kur both come from the north and only that of *reth* Kwathker and his son Fadiet from the south. Fashoda itself is considered to be in the northern half of the kingdom.

Dak Fadiet was initially installed, and ceremonially washed and shaved by Ororo girls in Fashoda on 18.11.45. He was followed by a large crowd of some hundreds of armed men from Gol Nyikang and particularly from his own area of Fanyidwai and all the Colo chiefs present. His following was much larger than that of Anei in 1943. The crowd may have been expressing simple gratification that at last a *reth* had come from the south ; they may have been there to try and prevent a candidate from the north being installed. But the ceremony

was completely peaceful, and the people of the villages surrounding Fashoda were not much in evidence.

The method of summoning the new *reth* was interesting. Dak like other sons of Fadiet was not far away, and the chief of Gol Nyikang sent his son by night to get him. Whether or not there is a mock fight between the selected candidate and the messengers I do not know, but the traditional form of words announcing the choice was told to me. It is an interesting example of Shilluk " understatement " when talking of the *reth* (c.f. Pumphrey *Sudan Notes & Records* Vol. XXIV, p. 44) — " You are our Dinka slave, we want to kill you " which means " You are our chosen *reth*, we want to instal you in Fashoda."

It was said that the installation of *reth* Anei had been hurried and many things had been forgotten. This was interesting in view of Anei's short tenure of office, which may have been due, in Shilluk eyes, to the omission of essential ceremonies connected with the installation. It was also said, and this was true, that Anei had hurried his installation through fear, in his anxiety to get it over. The new *reth* determined that in his case there should be nothing lacking and that the proper interval of time should be allowed to elapse. That this period is a time of ritual danger, as we suggested in the previous article, was frequently confirmed in 1946. The *reth* became more and more worried as the installation approached. There were rumours of rivals being harboured by important chiefs, and of preparations made for his assassination. They culminated in a strong rumour that a *nyireth* had declared his intention of assassinating the *reth* on the first day of the installation ceremonies. Mr. J. C. N. Donald, who followed the *reth's* party in their march to Fashoda on that day, confirmed the *reth's* nervousness. After the installation ceremonies were safely over, I asked the *reth* about this, suggesting that his apprehensions had been ill-founded, and he admitted, for the crisis was then over, that he had never had concrete evidence of any plot.

The actual preparations followed similar lines to those of 1944. It appeared that it was important that the ceremonies should take place on a waxing moon, and in the event this delayed the installation for about three weeks. As the time approached, there was the same apprehension that Nyikang would not start from Akurwa.

On 27.12.46 Nyikang and Dak arrived at Adodo Nyigir at sunset, carried by Kwanyikwom, the sacred clan from Akurwa who always have this duty. They entered the village, as they had done in 1944, over the body of a black sheep, and after dancing round the village, they went into the same house. They had come, as before, after

beating the bounds of Shilluk land at Moro, north of Kaka. The details of their progress were similar to that of 1944.

The only observed difference between the preliminaries for Nyikang's journey was the embassy to Fanyikang to get *dom* fibre for the ceremonial ropes. This year it was performed by ' Anongo,' one of the uncrowned sons of Nyikang, and not by Dak as in 1944. The embassy this year only went to the *dom* palm forest at Obai Dego, which is 15 miles downstream of Fanyikang.

On 28.12.46 the *reth* was still at Fashoda, and not yet fled to Debalo Kwom. It was expected that he would go before dawn on 29.12.46. Fashoda was full of his personal supporters from the southern Shilluk. I noticed that the *reth* had apparently made friends with the *nyireth* whom he had recently suspected of trying to ambush him.

The *reth* started for Debalo secretly at about 3.00 a.m. on 29.12.46. After resting half way, he entered Debalo, after the village had ceremonially resisted him three times. He stepped over a black sheep, held by Ororo. When he entered, his supporters all broke into one of the songs of Nyikang. This was a mistake, as the whole proceeding should have been secret. The *reth* stayed at the same broken down house as in 1944, and the same royal house was prepared, and left empty.

Jago Yorleiker, the chief of Gol Nyikang, was in charge of the ceremonies. All the fires had been put out before the *reth's* arrival, and preparations had been made to light new fire by the ceremonial method of *pic mac*. This method is later used at Fashoda and is described in our previous article (op. cit. p. 65). A bull was brought by Jago Yorleiker, which was to be speared when the *reth* came out of seclusion to be greeted by the assembled chiefs of Gol Nyikang in the evening. The chiefs of Gol Dhiang had no business in Debalo, and if they came, they would come as observers. Some sheep were brought by self-confessed adulterers. The *reth* insisted that only adulterers whose cases had not previously been opened could avail themselves of this privilege of amnesty, but in the event a few men tried to avoid a judgment debt by paying a sheep. There is some confusion about the ownership of these sheep. It seems clear that they belong to the *reth*, but are presented by him to the chief of Debalo Kwom (himself the chief of Gol Nyikang) as a recognition for his services in sheltering the *reth* in Debalo. In 1944 the chief of Gol Nyikang appropriated the sheep without permission.

That evening the drums of Nyikang were heard from Nyigir, and the *reth's* drums from Debalo. The procession carrying the sacred beads *Ocoro* from Lul arrived at about 8.00 p.m.

The next day December 30th, *Adul*, the temporary camp outside Fashoda, was built by Jago Yorleiker. This time he built both huts, and the chief of Gol Dhiang had no part.

On the 31st the *reth* and Nyikang were ready for the installation ceremonies. Nyikang and his army left Nyigir at about 9.00 a.m. and went straight to the village north of Fashoda, where they had to wait some two hours for the *reth* to start from Debalo. The army of Nyikang moved steadily this time and seldom turned back in countermarch as it had done in 1944. The *reth* was delayed ceremonially till about midday. His form of procession was similar to 1944, and the cattle which were bride-wealth for Nyakwer were observed being driven along beside his army.

There had been an abnormal White Nile flood in 1946, as in 1917 at the time of the installation of *reth* Fafiti, and the Khor Arepajur, which was dry in March 1944, was now an expanse of water about 80 yards wide. When the *reth* arrived at the khor, the *Golbainy* dragged the small black bull to the southern bank. The *reth*, taking Nyakwer by the hand, stepped over the bull and into a canoe. He was paddled across the khor with Nyakwer sitting behind him, while his followers forded the stream.

As the two parties of Nyikang and the *reth* approached each other Nyikang dashed forward and captured the *reth* without a struggle and began at once to carry him off to Cerfuc (op. cit. p.p. 61 & 78) Fashoda. This corresponded with Munro's observation in 1918 (*Sudan Notes & Records* Vol. I), but not with what we had seen in 1944, when there had been a spectacular mock battle with millet stalks. I was told that they had "made a mistake" in 1944, and also that owing to the hardness of the millet stalks they were afraid of injuring someone. This latter reason had not cancelled the fight in 1944. There is another possible reason: the *reth* himself was feeling in a state of acute personal danger, owing, as he thought, to the likelihood of someone making an attack on his life. He may have issued orders at the last moment that the battle was not to take place, in case someone should take advantage of the confusion to attack him. This seems more possible because the *reth's* army were all carrying millet stalks as they crossed the khor, as if in preparation for the mock battle.

The rest of the ceremonies closely followed precedent. *Reth* Dak, while enthroned on the stool was "possessed" by Nyikang, in the same way as *reth* Anei had been. He was afterwards led away to seclusion in *Adul* leading Nyakwer by the hand. An incident which may be of interest occurred while the *reth* was being led to *Adul*. The

sheep over which he had to step on entering *Adul*, defaecated on the way. The man holding the sheep picked up the droppings and rubbed them on the sheep's back. After he had done so he made gestures showing that he had restored the situation, indicating that the sheep was no longer defiled.

For the following account of the final ceremonies I am indebted to Mr. H. A. Nicholson, then Deputy Governor Upper Nile, with whom I witnessed them.

The final ceremonies of the installation of the new *reth* of the Shilluk took place at Fashoda on 3rd and 4th January. This time there were no large crowds, but only the chiefs and leading notables and the attendants of Nyikang and the *reth*.

On the evening of the 2nd, the *reth* had come out of the special grass hut into which he had been led with the small girl, his symbolic bride, Nyakwer, ' the girl of the ceremonies,' after the spirit of Nyikang had entered into him and he had been ritually seated on the sacred stool or throne. He had come out to go up into Athudowic, the hill of the throne, the great mound which dominates Fashoda, on which are set the four sacred houses which constitute the shrine of the Shilluk kings. With him was a girl, but it was not his bride. In accordance with tradition her place had been taken by a girl of the Ororo clan who had enticed him away. Next morning, when he discovered this, the *reth* sent out to search for his wife, and eventually learnt that she had been taken by Nyikang to his shrine. He sent envoys to ask for her return, and when Nyikang refused, he came out, stepped over a sheep, marched down the hill with his army, stepped over a grey-white bull and challenged Nyikang to battle. Nyikang's drum was then heard, sounding a distinctive beat, the lion call, and Nyikang accompanied by his sons Dak and Cal (a smaller figure made of the grey feathers of a female ostrich) came out from his shrine at the head of his army. After marching round his shrine, from right to left, he advanced to meet the *reth* and his party, who were waiting on the open ground in the middle of the village. Twice Nyikang advanced towards the *reth* and retired again to march round the shrine, while his drum sounded a new insistent beat. The third time the armies joined battle armed with millet stalks, and also, in the case of Nyikang's men, with special rope whips. This time the *reth* prevailed, and seizing Nyakwer who was with Nyikang's army, drew her with him at a run up into the hill, while Nyikang and his men withdrew to his shrine at the other side of the village.

Next morning the stage was set for the last act, the *kel tong*

piny, the planting of the spear in the ground, when the new *reth* appeared before the chiefs and notables, received their homage and addresses of exhortation, and in reply gave his undertaking to be a good and just ruler and to work for the welfare of the Shilluk people. The ceremony was simple but impressive. First of all the chiefs and leading notables lined up near the base of the hill, squatting on the ground with their legs tucked beneath them in the decorous and respectful manner which is distinctive of the Shilluk. Behind them was a similar group of men of lesser importance. Then Nyikang's shield with bells on it, (which is said to be of silver), his long spear, and his throne (the *kwom*), all wrapped in new white cloth to conceal them from the gaze of ordinary men, and his drum, were brought out and taken to the bottom of the hill in front of the waiting chiefs. Here the throne was set up on a giraffe skin. Shortly afterwards the *reth* appeared, clad in a white *lau*, and wearing the royal skin of the female Mrs. Gray antelope, and a new ivory armlet, which had been specially made for the occasion. After stepping over a sheep, he walked down the hill accompanied by Nyikwer and a small party of attendants, and protected by the royal fan made of the wings of the saddle bill stork in the form of a shield. When he reached the throne, he was lifted on to it by two men of the Ororo. The bearer of the fan held it over the *reth's* head to protect him from the sun, while the bearers of the shield, spear and drum stood in front. When all was ready, the shield-bearer advanced towards the rows of chiefs shaking the shield so that the bells jingled, and marked out the first speaker. This was Yor Leiker, the chief of the south, on whom together with Jago Tabo, the chief of the north, who spoke second, had lain the main responsibility for the choice of the new *reth*. These two were followed by some two dozen others, ending up with the chiefs of Tonga and Mwomo (Kaka), the wardens of southern and northern marches. The speeches took the form of exhortations to the new *reth* to deal justly with his people without fear or favour, that the spirit of Nyikang was in him and the people looked to him for good crops and good fortune. And as each speaker finished he stabbed his spear into the ground and left it there. When a speech met with approval, it was acknowledged by the shield bearer and the drummer coming forward and walking round the speaker shaking the bells and beating the drum respectively. When these speeches were over, the *reth* rose up and addressed the company, went over to the bull and stabbed it, and returned once more with his party into Athudowic.

The ritual was over. The new *reth* was secure in the occupation

of his throne, the spirit of the divine Nyikang, which had been as it were in suspension since the last *reth* Anei Kur had passed over a year ago, had entered into Dak Fadiet, and once again the Shilluk people could resume their normal life.

NOTES.

1. *The body of Nyikang.*

It was explained in our previous article that the body of Nyikang consisted of a bundle of bamboos brought from the Nuba Mountains. I now believe that this is not the case and that only Dak's body is of bamboo. It is more likely that the bundle is of ambatch, indeed this is generally believed. The Shilluk believe that the soul of a mortal can pass into a stick of ambatch, and I am informed by Dr. J. A. Heasty that if a Shilluk dies away from his home his relatives hold a ceremony to make his soul pass into a stick of ambatch, which they take back to his village and bury there.

2. *The vigil of the Beads 'Ocoro,' which are tied on to the reth's ankle.*

I interviewed the old *nyireth* who is responsible for these beads. She was reluctant to tell me much, and refused to show me the beads. I asked her, for she had great experience of these matters, how it came that some beads appeared with holes in them, and she told me that as she sat over them at night the ones which appear with holes went 'pop.' She told me that four had appeared with holes for *reth* Fafiti in 1918, and one for *reth* Anei and five for *reth* Dak. She said four or five were about right, one was too few, and more than five was too many. The beads with holes are tied on to the *reth's* ankle only during the ceremonies, and after that they apparently close up.

3. *Nyakwer.*

It was not clear in 1944 what became of Nyakwer. It now appeared that she became *bareth*, i.e. will become a wife of the *reth* when she grows up. The girl who was Nyakwer in 1944 still lives in Fashoda, and is now about 13 years old. There was of course a different girl in 1946.

4. *Fashoda.*

The sacred village of Fashoda was most beautifully cleaned and repaired for the installation. All the houses had had their fences renewed, and courtyards replastered with mud, though none of them was rebuilt. The whole of the mound on which the royal shrine of

Athudowic stands had been plastered with smooth mud from top to bottom.

5. *Fanyikang.*

As in 1944 the sacred shrine of Nyikang at Fanyikang was thrown down and rebuilt after the ceremonies.

BIRDS CAUSING CROP DAMAGE IN THE SUDAN

By C. E. Wilson.

THE purpose of this article is to give a brief account of species of birds which may cause damage to cultivated crops: only a few of these cause serious damage, but many may cause noticeable damage in some localities. The most serious pest, the Sudan Dioch (Quelea quelea aethiopica), has already been the subject of a separate account, so it will only be noted here.

As these birds occur over such a wide area, information at present available is rather incomplete, and is lacking from the country south of the ninth parallel of latitude. It is hoped that those who are interested may be able to supply further information especially from the south, both as regards habits and, distribution, and also as to local vernacular names of the different species, which are extremely useful in interpreting reports of damage from various districts. Any information should be sent to the Entomological Section of the Agriculture & Forests Research Division at Wad Medani, where an exhibit illustrating this article is on view in the headquarters building.

The Sudan Dioch (Quelea quelea aethiopica).

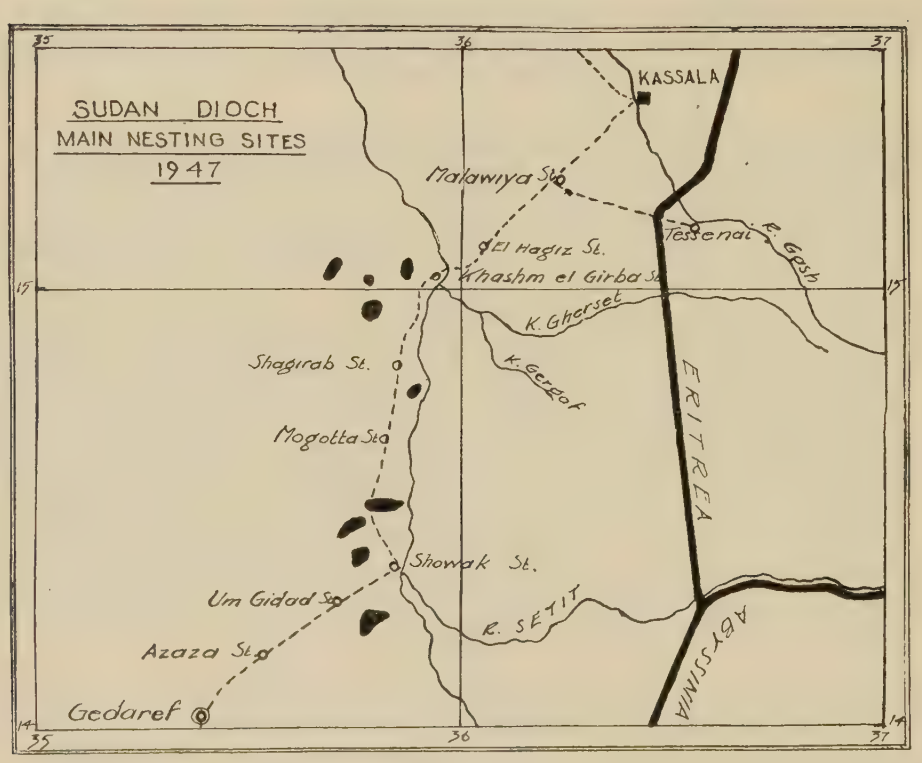
The habits of this species have already been dealt with in a previous article.[1] As it is a species of considerable economic importance it has a variety of local names, of which the following are a selection:— General, *Gadum Ahmar*. Blue Nile, *Abu Nadara*. Fung, *Abgier*. White Nile, *Azein*. Northern Darfur, *Abu Hatab* (also applied to Cut Throat Weaver). Southern Darfur, *Geigei*. The map of the main nesting area of 1947 is for comparison with that of the 1946 season illustrating the previous article.

Owing to the poor rains this season, nesting took place in general further south than last year, and also about 18 days later, but otherwise was the same.

The Nile Masked Weaver (Sitagra taeniopterus taeniopterus).

This species occurs on the River Rahad, and the White Nile, south of latitude 14°; in some districts it does some damage, but this is overshadowed by that caused by the Sudan Dioch, which also occurs in the same districts. It may on the whole be beneficial, through eating insects at some seasons, but this is not yet known for certain.

[1] *S.N. & R.* Vol. XXVIII p. 151.



It nests during September in the northern part of its range, and builds woven grass nests in trees such as *Sunt* (Acacia arabica), and *Talh* (A. seyal), where these are situated in flooded areas. It differs from the Sudan Dioch in usually having standing water under the nests. The nesting sites may cover several square kilometres, and individual trees may contain from 5 to 50 nests. Three eggs is the normal clutch, though four is not uncommon. Swarms also are not so dense as those of the Sudan Dioch.

The eggs of this bird show unusual colouration, they may be light blue, light brown, green, speckled green, or speckled brown on white. The colouration of the males during the breeding season is as follows :— Beak black ; head and throat black ; breast, upper abdomen, and back russet brown ; lower abdomen yellow ; wing and tail feathers dusky with yellow borders. During the dry season the black and russet brown portions change to brownish yellow, and the yellow areas become paler. Lengt h,male approx. 145 mms., female 135 mms. When flying

during the breeding season, the males appear to be much more yellow than close inspection would indicate. Local names are *Chilluk* or *Dukhān el Azabat*, both used fairly generally.

There are also several other species of weavers similar to the Nile Masked Weaver, and which may be confused with it. They are all generally yellow, with a black face mask, though most have less black, and more yellow instead of the russet brown, and they build rather similar nests. The Nile Masked Weaver however occurs in greater numbers than any similar species. They are not sufficiently important to describe in detail, and are only listed here.

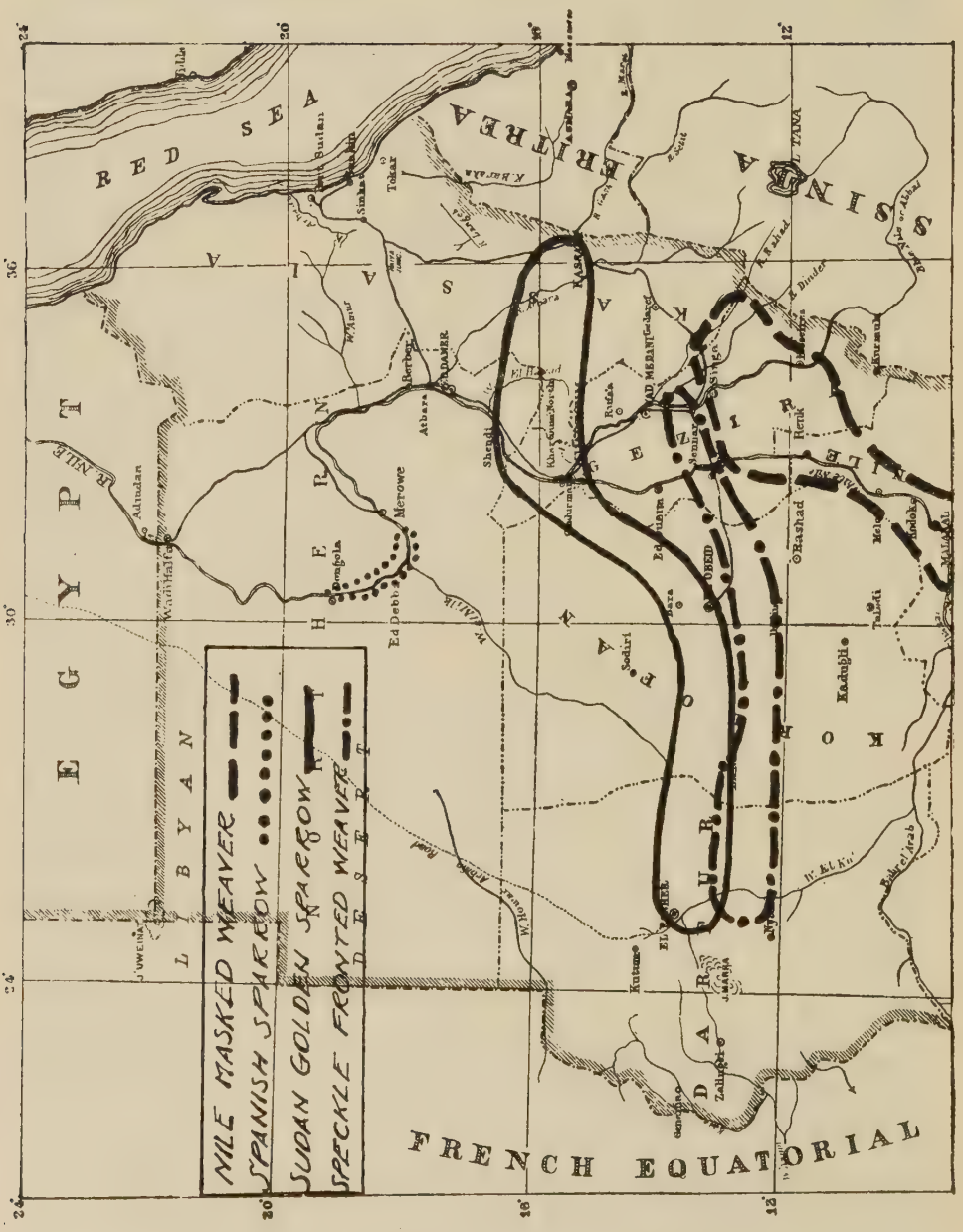
Little Weaver (Sitagra luteolus luteolus) a common resident. Uganda Yellow-Collared Weaver (Sitagra capitalis dimidiata) not common. Heuglin's Masked Weaver (Sitagra heuglini heuglini) not common. Abyssinian Masked Weaver (Sitagra intermedius intermedius) not common. Darfur Masked Weaver (Sitagra taeniopterus furensis) not common. Vitelline Masked Weaver (Sitagra vitellinus vitellinus) a common resident. Cinnamon Weaver (Sitagra badius badius) not common. White Nile Cinnamon Weaver (Sitagra badius axillaris) fairly common. Ruwenzori-V-Marked Weaver (Textor cuculatus feminina) a common resident. Abyssinian V-Marked Weaver (Textor cuculatus abyssinicus) a common resident. Uganda Spectacled Weaver (Hyphanturgus ocularius crocatus) a common resident. Ruppell's Weaver (Hyphantornis galbula) a common resident.

Grey Headed Social Weaver (Pseudonigrita arnaudi arnaudi).

This is mainly a southern species, but occurs as a minor pest in Southern Darfur, and in the vicinity of the White Nile. It is a smaller bird than most weavers, but builds a larger nest than usual, with two entrances pointing downwards. These nests are used throughout the year for roosting, but during the nesting season one entrance is blocked, and the eggs are laid above the blocked entrance. The eggs are usually three in number, and may have a white, or pale pink background, and may have reddish or brown spots, either evenly spread, or grouped in a ring at one end. An interesting observation in Southern Darfur in October 1947, was the occurrence of tree frogs in occupied nests of a nesting colony. The frogs, whose species it not yet determined, were about three quarters of an inch long, and in one nest two were hiding in the blocked entrance.

Speckle Fronted Weaver (Sporopipes frontalis frontalis).

This species is a minor pest in Kordofan and Darfur, where it occurs in small flocks about the thirteenth parallel of latitude. It



GENERAL DISTRIBUTION OF FOUR SPECIES

nests after the rains, and nests have been found from September to November. It makes a large nest of twigs, completely covered, with an entrance at the side, and lined with grass and feathers, (or else uses old nests of other species, but more information about this is required). It lays 3 or 4 eggs, greyish white, with dark brown speckling of varying intensity, or else a nearly uniform grey. The colouration of the male is :—Forehead and crown black, with small white tips to the feathers, giving a scaly or speckly appearance ; back of head and nape, and a band on either side of the neck behind the ear coverts, rufous ; rest of the upper parts ashy brown ; the quills, coverts, and tail, rather dark, with paler edges. Below, including the sides of the face, pale ashy-grey ; throat white, with a narrow line of speckled black on either side. Bill horny-brown. Female similar. Length about 135 mms. The local name in Darfur is *Kiteiu* (also used for the Golden Sparrow).

Cut-Throat Weaver (Amadina fasciata fasciata).

This species is a minor pest, but is widespread throughout the country. It has not been noticed in large flocks, but these may occur in some parts of the country, and notes of any occurrence of swarms of this species would be appreciated. The nests are similar to those of the preceding species, and the eggs are pure white. The colouration of the male is :—Above, pale rufous-brown, the feathers narrowly barred with black, giving a speckly appearance ; primaries and tail-feathers dusky-brown, unbarred, the outer tail-feather tipped with white ; a broad crimson band extends from the ear-coverts across the throat, in front of which the chin is pure white. The rest of the underparts whitish, with few scattered dark bars ; and a pale brown patch in the centre of the abdomen. Colour of bill dark brown. Female similar with no crimson band, and pale brown patch on abdomen nearly absent. Length about 120 mms. Local names : —Darfur *Abu Hatab*, (also used for Quelea quelea aethiopica). *Umm Dabak* (also used for Kordofan Rufous sparrow) Blue Nile *Dabh Musa* or *Dabh Ar Rasul*.

White Beaked Buffalo Weaver (Bubalornis albirostris albirostris).

This species occurs widely in the arid and savannah areas of the country. It is usually found in small flocks, and often in company with the Green Glossy Starling, which it closely resembles ; but from which it may be distinguished by the fact that the Glossy Starling shows green and blue reflections in the sun, while the Buffalo Weaver is always black. It nests in colonies, in trees such as the *heglig* ; the nests are constructed of dry thorny sticks, and are fixed together in groups of eight

or ten to form large opaque masses in the trees. Each tree may contain many such masses. The nests usually contain three eggs, about 25 mms. long with a greyish white background mottled with dark grey brown, (and it is difficult to extract these without being pricked). The colouration of the male is :—Plumage above and below black, sometimes when worn, or in young birds, paling to a brownish shade ; bases of the feathers, except on the crown, white, and often showing as white patches when disarranged ; outer webs of the middle primaries narrowly edged with white. Bill dusky at tip, whitish or yellowish at base, which is swollen and porus in texture; this swelling is only found in the breeding season ; in the " off-season " the bill is black. Female similar to " off-season " male. Length about 240 mms. The local name in general use is *Ak*.

The Sudan Golden Sparrow (Auripasser luteus).

The range of this species is to the north of that inhabited by the Sudan Dioch, extending across the country roughly on the line El Fasher, El Obeid, Khartoum, Kassala. In this zone it may do considerable local damage. The birds nest in this area, and it would appear that they migrate little, though information on this point is sketchy. They form in low thorn trees, large scattered colonies which may extend for 20 miles, though there are seldom more than two or three nests in a bush. These nests are loosely constructed of twigs, and are completely enclosed with a small entrance in the side ; usually three bluish white or white eggs, with brown mottlings, are laid during early in September. During the dry season the birds can be found in the vicinity of Khartoum, where they arrive in the evening in large numbers, and roost in the trees in river front gardens and neighbouring forests.

The colouration of the males during the breeding season is :— Head neck breast and abdomen, canary yellow ; back russet brown ; wings and tail dusky. Females, and dry season males :—Throat breast and abdomen, pale yellow ; top of head and back brownish grey ; wings and tail dusky. Length approx. 130 mms. Local names, Northern Darfur *Kiteiu* (sometimes used generally for small birds). Khartoum and Blue Nile *Tayr el Asfar* and *Safouri*, Dar Hamar *Kankoja*. Sometimes incorrectly in Northern Kordofan *Timelein*.

The Spanish Sparrow (Passer hispaniolensis transcaspicus).

This species is only a winter resident in the Sudan, and breeds in Palestine and further to the north. It only appears occasionally in numbers, but when it does it inflicts serious damage on the riverain

cultivations in Dongola. Halfa, Merowe, and Berber, where conditions would appear to be similar, escape damage. The birds first appear in early November, and flocks continue to arrive for about a month. They depart during March.

A serious cycle of damage by these birds lasted from the winter of 1914-1915 to that of 1919-1920.

These birds feed in small parties during the day, but collect in areas of suitable bush, such as old basin forests, in large congregations at night. During the time this bird is in the Sudan its food is almost wholly graminaceous. It eats cultivated grain crops, or, when these are not available, weed seeds, and even green dates, It does not usually eat grain which has fallen to the ground.

The colouration of the males when in the Sudan is :—Crown reddish brown ; throat black ; and sides of the body spotted with black. The other markings are similar to those of the domestic sparrow, which has the top of the head slaty blue, and the sides of the body unspotted The average length is 160 mms. The local name is *Tayr faransawi.*

Sudan House Sparrow (Passer domesticus arboreus).

This species is widespread throughout the arid parts of the Sudan, where it occurs in the vicinity of human habitations ; it can do considerable damage. During most of the year it makes untidy grass nests in holes in buildings, starting about March, and can usually be reduced to negligible quantities if villagers institute a weekly clearance of nests from their houses, as the population is not replenished by large immigrations. Usually three white eggs, with dark brown spots are laid. The colouration of the male is :—Crown rump and upper tail-coverts, grey ; mantle pale rufous with black streaks ; a band of dark chesnut on the sides of the head, from above the eye to the nape ; below it is a black band running forward below the eye to the base of the bill, and continuous with the black bib which occupies the chin, front of the neck and breast ; a white patch on either side, including the ear-coverts ; wings and tail dusky with chestnut margins to the feathers, and a white band across the wing formed by the tips of the middle coverts ; under-parts greyish-white. Female duller colour, with no black bib or black line below the eye, or chestnut on the sides of the head. Length approx. 150 mms. The local name in the Blue Nile Province is *Wad Debarak.*

Kordofan Rufous Sparrow (Passer iagoensis cordofanicus).

This bird is a common resident in Kordofan and Darfur, though

it is not a serious pest; it appears to occur in pairs during October, but may congregate in small to medium flocks at other times of the year. It makes nests of grass in trees, and may lay 3 or 4 eggs, which are bluish white, streaked with brown or dark grey. The colouration of the male is:—Crown and nape dark ashy-grey, separated from the black ear coverts by a brick red line running from above the eye to the sides of the neck; middle of the back rufous-brown, with conspicuous dusky streaks; rump and upper tail-coverts rufous brown, wings and tail feathers dusky, edged with rufous; below, a black patch on the throat, with a whitish border on either side; breast and flanks greyish white, almost pure white in the centre of the abdomen. Bill black. Female similar, with the black on head and throat replaced by pale grey. Length about 155 mms. Local name *Umm Dabah* (also used for Cut-throat Weaver).

The Red Bishop Bird or Dura Bird (Euplectes franciscana franciscana).

This bird usually attracts more than its fair share of attention, partly owing to its striking rainy season plumage, and also to its wide distribution throughout the country. In reality it is not usually more than a local nuisance. During the late rains it builds a globular grass nest, usually in low bushes, with large entrance high up in the side; it is of much more fragile construction than that of the weaver birds, being made of fine grasses not closely woven, and it is firmly fixed in the bush. It usually contains three small pale blue eggs.

The colouration of the males during the breeding season is:—Crown sides of face lower breast and abdomen, black; nape throat and chest, rump, and upper and under tail coverts, which are elongated almost concealing the tail-feathers, crimson red; centre of the back a little duller; wings and tail brown with paler margins. Female and dry season male:—Underparts pale brown, back feathers dusky with light borders, light brown eye stripe. Length about 110 mms. The local name *Abu Shersheri* is widely used.

Eastern Calandra Lark (Melanocorypha bimaculata).

This species is a winter visitor to the Sudan, and may do considerable damage in areas such as the Southern Gezira, where the birds dig up freshly sown grain. They start to appear in early November, and remain until the end of February; during the winter they may be seen in large or medium flocks. They can be distinguished in flight from other small grain eating birds by their larger size, and slower wing beats, and also by the more diffuse nature of the flock. The colouration of

1. Sudan Dioch. Male.
3. Sudan Dioch. Male. (early rains).
5. Cut-throat Weaver. Male.
7 Nile Masked Weaver. Male.

2. Sudan Dioch. Female.
4. Speckle Fronted Weaver.
6. Cut-throat Weaver. Female.
8. Nile Masked Weaver. Female.

1. Sudan House Sparrow. Male.
2. Sudan House Sparrow. Female.
3. Kordofan Rufous Sparrow. Male.
4. Kordofan Rufous Sparrow. Female.
5. Spanish Sparrow. Male.
6. Spanish Sparrow. Female.
7. Sudan Golden Sparrow. Male.
8. Sudan Golden Sparrow. Female.

1. White Beaked Buffalo Weaver.
2. Green Glossy Starling.
3. Sudan Mourning Dove.
4. Pink Headed Dove.
5. Sudan Laughing Dove.
6. European Turtle Dove.
7. Ruff.
8. Eastern Calandra Lark.

1. Red Bishop Bird. Male.
2. Red Bishop Bird. Female.
3. Grey Headed Social-Weaver.
4. Little Weaver.
5. Uganda Spectacled Weaver.
6. Ruwenzori V-Marked Weaver.
7. Vitelline Masked Weaver.
8. Ruppells Weaver.

Damage caused by Sudan Dioch. Fung 1947.
[*Photo G. A. Booth*]

White Beaked Buffalo Weaver Nests. September 1947.

Sudan Dioch. Swarm of Feeding birds.

Uganda Yellow-Collared Weaver.

Abyssinian Parakeet.

Nests showing entrance.

Sudan Dioch. Nile Masked Weaver. Ruppells Weaver.
Sudan Golden Sparrow. Grey Headed Social-Weaver.

Nile Masked Weaver Nests. R. Dinder 1947.
[*Photo Mohd. Hassan El Zakir*]

the male is as follows:—Upper parts sepia brown, feathers centred darker; tail brown, the outer pair of feathers with small white tip; a black patch on each side of the lower throat, but not meeting in front; underparts whitish, flanks suffused buff. Upper breast slightly spotted; wings dark brown. Bill yellowish brown. The female is similar. Local name, Blue Nile, *Garagara*.

Green Glossy Starling (Lamprocolius chalybeus chalybeus).

This species is found widely throughout the Sudan. It occurs in small flocks, and may do considerable local damage to dukhn and dura. Nesting habits would appear to be similar to those of the White Beaked Buffalo Weaver, but more information on this point would be welcome. The colouration of the male is:—General colour metallic glossy green; ear coverts dark blue, and not so glossy; some of the secondaries and coverts with black spots at the tip; rump and tail a more bluish shade; underparts from the lower breast more blue, becoming violet on the abdomen; under wing coverts purplish, underside of wings and tail dusky; second to fifth outer primaries strongly indented on the inner edge. Bill black. The female is similar. Length about 270 mms. Local names northern Darfur *Weir*, Southern Darfur *Umm Dulba*, Kassala Province *Kolia*.

Abyssinian Parakeet (Psittacula krameri parvirostris).

This widely distributed species, which is the parakeet commonly seen, does not usually do much damage to crops, though fruit trees such as guavas may suffer considerably from their depredations; in the Nuba Mountains some local damage is caused to grain crops, where these are in the vicinity of patches of forest inhabited by these birds. However it is only noted as an interesting minor pest. Local name *Baghbaghan el Akhdar*.

The Ruff (Philomachus pugnax).

This species is a winter visitor which arrives in the Sudan about the end of October, and leaves about the end of March. Large flocks can be observed in the vicinity of the rivers, and in the Gezira, though it is seen in smaller numbers on the white Nile south of Kosti. In some areas damage is attributed to this bird; it usually eats animal matter, and fallen seeds, but large flocks may puddle sown areas of wheat after seeding. In the off-season plumage, which is all that can be observed in the Sudan, the colouration of the male is:—Above pale brown, with darker centres to most of the feathers; wings with a white

band formed by the tips of the greater coverts ; the wing feathers dusky with brown shafts, except that of the outer one which is paler or white ; centre part of rump and upper tail-coverts like the back, the sides pure white ; the tail feathers brown with paler margins ; below, including the under wing-coverts and axillaries, white, mottled on the fore-neck and chest with pale brown. Bill dull blackish brown, sometimes with a dull yellow base. The female is similar. Length about 220-290 mms. Local name, Blue Nile, *Girwil*.

Doves.

There are four species of doves which occur in large numbers, and do damage. One of these is a winter visitor, and the other three are resident species. Large flocks, seldom wholly of one species, may be observed during the late rains and winter in the central Sudan, though considering the numbers, and the fact that individually they can do much more damage than weaver birds and sparrows, the total amount of damage done would appear to be small. In fact they may be more beneficial than otherwise, as specimens have been obtained with their crops full of the seeds of common Gezira weeds. Very large quantities of doves of mixed species have been seen in September in the vicinity of Khashm el Girba and the Blue Nile, feeding on grass seeds, and in the winter near Sennar. Nesting of the resident species takes place from the early rains to the end of the year.

The winter visitor is the **European Turtle Dove** (Streptopelia turtur turtur). This species, which occurs in England in the summer, may be found in flocks in the northern and central Sudan between November and April, to about the 12th parallel of latitude. The colouration of the male is as follows :—Forehead grey, becoming ashy-brown on the crown and nape ; a patch of black feathers on each side of the neck conspicuously tipped with white, and bluish-grey ; mantle rather dark brown ; back and rump of the same colour, but with dark centres to the feathers. Innermost wing-coverts, secondaries, and scapulars, black, broadly margined with rufous-cinnamon ; outermost wing-coverts mostly blue-grey ; primaries dark brown, with a grey wash when fresh ; central pair of tail feathers dark brown, remainder black, washed with grey, and very broadly tipped with white, the white extending up the entire outer web of the outermost tail feathers. Chin whitish, throat and breast vinaceous, darkest on the upper breast, and washed with grey ; sides of body dark blue-grey, washed with vinaceous ; middle of belly and under tail-coverts white. Bill blackish. The female is similar. Length about 270 mms. Local name *Gimri*.

The Sudan Mourning Dove (Streptopelia decipiens decipiens).

This species is abundant throughout the year in the arid parts of the country.

The nests of this, and two following species, are typical dove nests, consisting of a scanty flat structure of twigs, containing two white eggs. The colouration of the male is :—Forehead cheeks and ear-coverts pale grey, gradually becoming darker grey on the crown, and pale pinkish-vinous on the nape ; at the base of the neck a broad half-collar of black, bordered between the nape and the collar with white ; mantle, scapulars, inner wing-coverts, and inner secondaries earth-brown, the outer coverts blue-grey ; primaries dark brown, the extreme margin of the outer web white ; outer secondaries brown, washed with blue-grey. Back, rump, and upper tail-coverts brown, more or less washed with grey, this wash most pronounced on the rump ; central pair of tail feathers entirely brown, except for a grey wash on the basal half on either side of the shaft ; rest of the tail feathers basally slate colour, washed with paler grey, the terminal third of each feather dove-grey, gradually merging into white at the tip. Chin white ; cheeks throat and breast, pale vinous-pink, gradually merging into grey on the belly and flanks ; under tail-coverts grey, as are the under wing-coverts and axillaries. Bill black. The female is similar to the male. Length about 300 mms. Local name *Dabas* (which is also used for the next species).

Pink Headed Dove (Streptopelia roseogrisea roseogrisea).

This species is the other common ring necked species resembling the Mourning Dove, but is most easily distinguished in the field by its smaller size, being about 270 mms in length. There is also more white on the tips of the tail feathers, and on the outer border of the outer tail feathers. The top of the head is pale pinkish grey, compared with the slate grey of the Mourning Dove. This species is more common in Kordofan the Nuba Mountains, and the Red Sea Hills. The local name is *Dabas*.

The Sudan Laughing-dove (Stigmatopelia senegalensis sudanensis).

This is the smallest of the common Sudan doves. It is a very tame bird, and is noticeable for its distinctive cooing. The colouration of the male is :—Entire head nape and hind neck dark vinaceous, gradually becoming browner on the mantle and scapulars ; a broad collar of bifid feathers on the forepart of the neck or crop, which passes on to the sides but not the back of the neck, black at the base, rust

colour terminally. Lower back and rump dark grey. Outer wing-coverts, both lesser and greater, grey, as are also the secondaries; the inner wing coverts brown at the base, with broad cinnamon-rufous tips; primaries dark brown; upper tail-coverts, and middle pair of tail feathers, brown washed with grey, the next two pairs grey, the remainder blackish slate at the base, terminally white, the outermost with the terminal half, and the fringe of the entire outer web white, the basal half of the inner web black. Breast below the collar vinous like the head, becoming white on the belly. Under tail-coverts white; under wing-coverts and axillaries grey. Bill black. The female is similar to the male. Length about 260 mms. Local name *Hemeiri*.

Egyptian Goose (Alopochen aegyptiacus).

In addition to the foregoing more obvious pests of grain crops, damage is caused in some areas by Geese and Ducks, mainly the Egyptian goose, which is too widely known to need description. In the Northern Province damage is done to developing crops by the geese grazing and trampling the crops into the mud. Near Umm Ruaba also, damage has been recorded from geese eating considerable amounts of grain from the fields, after flighting on to them early in the morning. The Egyptian goose is a resident species, and makes nests in clefts in rocks on hills, or may use old nests of eagles or related species in trees The nest is thicky lined with down, and between six and twelve eggs are laid. A nest containing eleven eggs was found on the top of one of the twenty fifth Egyptian dynasty pyramids at Nuri during the winter of 1942-43.

THE AGE-SET SYSTEM AND THE INSTITUTION OF "*NAK*" AMONG THE NUER.

By P. P. Howell

The main characteristics of the age-set system among the Nuer have been described by Professor Evans-Pritchard both in his book *The Nuer* and in articles in volumes XVIII, XIX and XX of Sudan Notes and Records. He has shown that age classification among the Nuer has not the educational or military functions which it has among certain other tribes in East Africa such as Masai and Nandi, but has social functions of considerable importance. He also mentions that the institution is fast dying out, although the essential initiation ceremony known in Nuer as *gar* continues.

One aspect which is either a function, or an institution closely associated with age-sets, is known in Nuer as *nak*. This word literally means kill or slaughter, and is used to describe the special camps which are held periodically and at which a large number of oxen are slaughtered and eaten by the participants, who are all male adults and for the time being segregated from the rest of the community. Professor Evans-Pritchard says of these camps :—

" According to my information the newly initiated boys do not always collect in camps after their wounds are healed, but only in some years, about every second year, and then it is not only the new initiates who form a camp but also members of their age-set who have been initiated in previous years and even members of senior age-sets....., I think that these camps (called *nak* or *kanar*) are a custom separate from the age-set system, though related to it by the fact that its members are mostly recruited from unmarried youths of the village and are hence mainly of the same age-set." [1]

Before considering the question whether these camps are a culminating ceremony required in the fulfilment of age-set organization, a normal function of age-sets, or an independent custom in which age stratification is merely an incidental feature, it is necessary to describe more fully the form that these camps take, and all associated custom concerning them.

The camp is not a tribal institution in the sense that all the members of certain age-sets gather together in one place for the purpose of feasting ; it is only tribal in that the youths of one village or locality join together in groups throughout the tribe, all at the same time or

[1] Sudan Notes and Records XIX p. 245.

during one year. The participants are rarely drawn from a social or territorial group larger than what has been defined as a tertiary tribal segment. Thus there are many camps taking place at the same time throughout a wide area, but according to Nuer informants there are rarely more than forty participants nor less than ten.

The participants are certainly not confined to those boys who have undergone the ritual and operation of initiation together, but are drawn from young men who have been initiated over a considerable period. The length of this period and the guiding factor in its determination is a controversial subject and the purpose of this article is to provide what evidence is available in answer to that question. Theoretically, as Professor Evans-Pritchard has explained, among the Nuer there is a period of initation extending over an indefinite number of years when boys throughout a Nuer tribe may undergo the operation of initiation, and a period when no initiation takes place. In the past but apparently not universally in these days, this period was defined by the religious expert known among Nuer as the *Wut Ghok* — the man of the cattle. When a new period of initiation is to take place the *Wut Ghok* takes the 'knife' from his cattle byre and by this symbolic act announces that the operation of initiation may now begin. At the close of the period, he takes the knife, puts it into a gourd and hangs it in his byre.[1] Within the tribe no further initiation may take place until he takes it out again. To the Nuer there are therefore two periods—'when the knife is taken out' and 'when the knife is hung.' For want of a better term, I refer to the former as an 'open period' and to the latter as a 'closed period.' These open and closed periods were of paramount importance in the pattern of age-sets in the past, but the custom is no longer followed very strictly and in some Nuer areas not at all. One of the main causes of this breakdown is undoubtedly the establishment of public security by the present government and the comparative peace which exists in most parts of Nuer land. In the past, a youth who had been *garred* and had undergone full initiation, at once entered the status of warrior and thereafter was expected to take part in raids and in the defence of the community. Boys were not therefore initiated at so early an age as they are nowadays, for a small boy would run grave risks of extinction in a battle in which experienced warriors were the participants. Nowadays, boys are initiated at a much earlier age, sometimes when they are only nine or ten.

[1] *Ce ngom kam rar* : He takes out the knife.
Ce ngom ngab : He hangs the knife.

The general breakdown in the age-set system is the cause of much confusion and is one of the reasons why the true function of the *nak* is hard to find. The participants of a *nak* gather together some weeks before the first millet harvest, and it should be noted that of all times of the year this is hardest for the Nuer. What stocks of grain they held are nearly exhausted and the cattle have been moved back to the permanent village area. The feast does not take place out in the riverain pastures, but in the area of permanent habitation. Usually the cattle byre of the father of one of the participants is provided for the purpose. All cattle are removed and only the oxen for slaughter are brought near. The participants are segregated from the rest of the community, although a few women, usually women beyond the age of child-bearing, may assist them in cooking and some of the older men may join them, but girls are not allowed to come near.

By ' participants ' is meant those who are subject to the rules of the feast and who are expected to provide oxen for slaughter. It is these persons who are considered to be assisting in the feast and not other men who are there only as a privilege, if they are there at all, by reason of their special relationship to the contributors. Each youth should provide a bull for slaughter, but since this is not always possible, particularly now that the Nuer have lost so many cattle and cannot replace them by raiding, two or even three boys may club together to provide one. Those who cannot find a suitable ox among their own herds, must borrow one from someone else. The process of borrowing bulls for this purpose is governed by special rules which do not apply in normal exchange transactions and the rates of exchange are different. The current rate of exchange among the Nuer is now one cow calf for a large bull. Oxen are often required for sacrificial purposes or in times of extreme hunger, and exchanges of this sort are frequent, but the borrower usually receives the loan on the understanding that he will pay a cow-calf when he is able to do so. Often a suckling cow calf is earmarked for the purpose, but the owner is not usually expected to pay on the spot. These transactions known in Nuer as *ngwal* are the cause of much litigation in the courts nowadays.

Loans contracted during a *nak* are, however, based on different and higher rates of exchange. They are stereotyped at any rate in theory, though it is probable that like all Nuer customary payments they are more a traditional basis for compromise than an unbreakable rule. The rates of exchange are :—

One large ox = two cow-calves and one bull-calf.
One medium ox = two cow-calves.
One small ox = one cow-calf and one bull-calf.

Nuer say that the reason for this relatively high valuation is that the debtor is allowed a long period of credit.[1] During that period the debtor is not expected to pay and the man who loaned him the ox is not allowed by convention to ask for repayment. To do so would be to subject himself to ridicule, and his claim would not receive the encouragement of the community in which he lives. Further, if a man is asked to supply a bull on these terms to one of the participants, he cannot refuse. If he did so his action would be universally condemned by his fellows and he would run the risk of spiritual contamination resulting in sickness and even death among the members of his family. Moreover, those who qualify for participation in the feast and who are expected to supply a bullock are allowed great licence in obtaining them. They go round begging from their relatives and neighbours and should a man be brave enough to resist their demands, they would either steal his ox, kill it in front of his eyes or cut its tail off, an action which is not only extremely insulting to the Nuer, but which would also render it useless for anything except slaughter. It seems that refusal is rare for these reasons, and also because Nuer are very much afraid of acquiring a reputation for meanness. Generosity in the giving of cattle for all such purposes is considered the greatest virtue among the Nuer; meanness is a grave social blunder.

The time set for repayment is indefinite and varies from four to eight years [2] and is controlled by the pronouncements of the *Wut Ghok* The owner may then demand repayment, and his debtor is equally obliged to produce the cattle at once, provided he has cattle at the time with which to do so. These conventions are less binding than they were in the past, and disputes arising over such repayments sometimes appear before the courts.

The participants of a feast choose one of their number to act as slaughterer: he has no special title, but his spear which he uses for the purpose is known as "the spear of slaughter" — the *mut nak*. Oxen are speared in the heart as is customary among the Nuer for all purposes, including sacrifice. Oxen are slaughtered every two or three days — the amount of meat consumed by Nuer at one sitting is prodigious — and with the exception of certain recognized portions (the ribs and back in particular which are allotted to the elders) the

[1] The rates given here were quoted to me by Gaweir Nuer of the Bar section. I doubt that they would apply nowadays and there are certainly different rates current and traditional in other tribes.

[2] linked to the 'open' and 'closed' periods of initiation.

meat is eaten only by members of the camp. Sometimes stock and broth are sent to other relatives or to the old women who assist in the cooking.

All participants are completely segregated from the main body of the community, although as Professor Evans-Pritchard suggests, men of different age-sets may take part. They may not communicate with girls or women, nor are they allowed to attend dances, and since the bulk of the younger males are thus segregated, dances do not take place, even though the period covers the time of year which may be described as the height of the dancing season. They do not take part in cultivation or harvest, this duty being left to the elder men and the women. They may have no communication with their cattle which are carefully avoided and are forbidden to rub themselves with cattle dung ashes, a daily routine among the Nuer, for this would contaminate the cattle.

These restrictions suggest that the participants are in a spiritual condition highly dangerous to the rest of the community and Nuer consider that any breach of the observances would cause illness and death among their relatives and their cattle. This further indicates that the ceremony is or was closely associated with initiation, for among all primitive peoples the period of initiation is one fraught with all kinds of spiritual peril. J. H. Driberg suggested in his lectures, that in most forms of initiation among the cattle-owning tribes of Africa, there are three periods: that of segregation, when the initiates are cut off from the community as a whole; that of aggregation, when they are introduced to their immediate elders, the age-set above them; and that of reintegration, when they are reintroduced to the community as a whole.[1] All these periods are accompanied to a greater or lesser degree with ceremonial and ritual acts signifying a change of status from boyhood to manhood. If this is a safe generalisation, the *nak* ceremonies of the Nuer suggest the period of aggregation, for the participants are, drawn from the recently initiated youths and their immediate elders and these are together kept apart from the main body of the community. The period of segregation is represented by the actual ceremony of initiation when the youths are 'cut,' their foreheads scarred in parallel lines in the manner of the Nuer. This is the period of greatest danger to the youth himself and to his relatives. He is temporarily out of status, his position cannot be defined either in a spiritual sense or in

[1] This theory was inspired by the writings of Van Gennep. See Arnold Van Gennep: *Les rites de passage* Paris 1909.

relation to the age stratification of society. Among the Nuer there is apparently no period of reintegration, but although there is no evidence now available, it may well have existed in the past.

Nuer informants throughout those tribes with which I am familiar [1] have suggested that the ceremony of *nak* in the past always took place on completion of a recruitment period, the end of the 'open period'. They talk of it as a final ceremony by which the members of one age-set are bound together and their relative position defined in relation to the senior age-sets. It is significant that theoretically *nak* should take place at the end of a closed period. Hitherto, during the open period, the junior age-set consists only of a loose association of sub-sets, each with names which may vary locally. Although a man is bound more closely to those who underwent initiation with him, these ties tend to be loosened, the intensity of the relationship of a sub-set being modified by membership of a full age-set. Since there is nowadays great laxity in observing the open and closed periods of initiation, age-stratification becomes confused and modified. Full age-sets and sub-sets, termed *ric* in any definition, are not clearly distinguished, and membership of an age-set, which should cover a considerable period — several years of initiation and recruitment and several when the 'knife is hung up' — only becomes clear later in life.

As in the case of the many terms used in describing the social structure of the Nuer, definition between sub-sets and age-sets is confused and clearly varies with the context. For example the more recent sub-sets of the Lak tribe are *Cargac*, *Koriom*, *Kailou* and *Codjok*, the former being the youngest, and these are now loosely associated and called collectively *Rialmac* which represents a full age-set. This age-set in Gaweir is again called *Rialmac*, but the sub-sets are in a different order. They are *Codjok*, *Koriom* and *Rialmac*, while two recently initiated called *Thut* and *Gwulung* are loosely linked to them. There are indications that a division will eventually be made either between a *Codjok* and *Koriom* or *Codjok* and *Thut* and that the whole age-set thus formed will finally be called either *Thut* or more likely *Gwulung*. Among the Thiang these sub-sets are the same as in Gaweir except that a senior sub-set whose members are older than *Rialmac* and who are called *Caiyadni* collectively, are included in the grouping. The superabundance of sub-set names tends to disappear with the passing of time and age-stratification becomes defined in society by reference to the name of the main age-set. Moreover, reference to

[1] Gaweir, Lak, Thiang, Lou, Western Jikany etc.

sub-set names is not usually made beyond the immediate community in which recruitment has taken place; the finer definitions fade on the horizon of social distance as well as in the passage of time.

A table of the last eight age-sets is as follows:—

LAK NUER		THIANG NUER		GAWEIR NUER	
BOILOC		*BOILOC*	*Boiloc* *Wun*	*BOILOC*	*Boiloc* *Wuor*
RUOB		*RUOB*	*Ruob* *Gwulung*	*GWULUNG*	*Ruob* *Gwulung*
WANGDEL	*Wangdel* *Nyadwar*	*KIEC*	*Wangdel* *Nyadwar*	*KIEC*	*Wangdel* *Nyadwar*
KIEC	*Kiec* *Twot*	*WUON*	*Wuon* *Karam*	*YAL*	*Yal* *Lilnyapagh*
WUON	*Wuon* *Karam*	*KEC*	*Kec* *Codnyal*	*KARAM*	*Karam* *Codnyal*
PILUAL	*Kec* *Pilual*	*PILUAL*	*Pilual* ?	*PILUAL*	*Pilual* *Caiyadni*
RIALMAC	*Kailou* *Codjok* *Koriom* *Cargac* *Gwulung*	*RIALMAC*	*Caiyadni* *Koriom* *Codjok* *Thut* *Gwulung*	*RIALMAC*	*Rialmac* *Koriom* *Codjok* *Thut* *Gwulung*

TABLE SHOWING AGE SETS
AND SUB-SETS IN THE LAK, THIANG, AND GAWEIR TRIBES.

Note.—The division of the Sub-Sets of *Rialmac*, the most recent age-set, will not be clear for some time. *Gwulung* and the Sub-Set above will probably form a New Age-Set eventually.

Analysis of this diagram shows that the association of sub-sets is by no means consistent, the *Caiyadni* subset of *Thiang*, for instance, being included in *Rialmac*, while in the any other areas it is usually included in *Pilual* — a senior set to *Rialmac*. The reason is that although sub-set names are often borrowed from other tribes, those included under the name are not necessarily of the same age and a few years may intervene between them. This in itself must represent

some form of breakdown in the system, for the essential motive of a common name is to define common age. The line dividing the new sub-sets of *Gwulung* and *Thut* from the main body of *Rialmac* is not yet settled, and it may well be that *Codjok* will be associated with them into one main age-set. Definition will come, and the apparent confusion will eventually be solved, more by usage than any specific division.

There are indications, however, that this was not so in the past, and that the divisions were made and emphasised by the performance of the *nak* ceremony. Nuer describe the division of age-sets as *dak* — *ce ricdien dak* : 'they divided their age-set.' *Dak* is a common word used to express splitting or fission in society as applied to kinship or other associations. *Dak mara* is an expression used to describe a breaking of relationship. A Nuer will also say "*ce math dien dak*"[1] meaning "they broke off friendship." The expression linking the division (*dak*) and the institution of *nak*, is "*cenak-dien kel*," "they assisted at the same *nak*." For example, the Thiang Nuer say "*wangdel kene kiec ce nak dien kel.*" "*Wangdel* and *Kiec* had one *nak*." "*Kec Kene Conyal ce nak-dien kel.*" I confess, however, that Nuer informants are singularly confused on this subject, and in some cases participations in one *nak* ceremony do not fit in with the general pattern of age-sets recorded in the diagram. This is due, I believe, to a confusion in memory in the days when formal division was usual, and complicated by the recent breakdown in clearly defined "open and closed periods." It is probable, however, that the *nak* ceremony was closely associated with formal division and indeed, amounted to the act of division between the sets, grouping certain sub-sets into one age-set by common participation and dividing them once and for all from their seniors.

There is also a curious process which seems to have taken place only in recent years and is undoubtedly connected to the general breakdown in the system. Nuer sometimes talk about *nak bwoth* — "the slaughtering in time of famine." The recent *nak* ceremonies which occurred on a small scale in the Zeraf valley, were often referred to as *nak bwoth*. The inference was that the motive of the feast was something different to the usual and old purpose of *nak*. In 1943 small groups of men met and segregated themselves from the rest of the community relying purely on meat for subsistence, while the aged, the infirm and the women consumed what milk and grain was available. That year was one of famine and widespread suffering among the Nuer of the area, and, if my conclusions are correct, the process shows a

[1] "*Math*" is a special social relationship—friendship which involves recognized mutual obligations and conventional conduct.

most interesting adaption of an institution primarily associated with age stratification, to a purely economic purpose much needed in the circumstances.

NOTE BY PROFESSOR E. E. EVANS-PRITCHARD

Mr. Howell has asked me to add a note to his article. I am glad to do so because information I collected in 1936 in the central part of Western Nuerland (*Darcieng*) suggests that his interpretation of the *nak* may be correct, though I am not entirely convinced that it is so, and further research, especially in that part of Nuerland, would be necessary to confirm his hypothesis.

Mr. Jackson (*Sudan Notes and Records*, vol. VI, 1923, pp. 146-7) says that these gatherings to slaughter oxen are held as part of the rites of initiation after the wounds are healed. In an article published thirteen years later (*Sudan Notes and Records*, vol. XIX, 1936, p. 245) I took the view that they were not part of the age-set institution but were only incidentally associated with it. I think that there can be no doubt that the gatherings are not held as a closing rite in the initiation ceremonies through which each batch of initiates passes when their wounds are healed. For one thing, they are held too early in the year for them to have such a position in the initiation ceremonies. My earlier statement that gatherings of the kind are held in years of hunger was upheld by further enquiries in the Lou and Karlual tribal areas in 1935 and 1936. A somewhat hasty enquiry in the course of a journey through the Darcieng area suggested, however, that there the *nak* forms some part of the age-set organization, though what is its role in it was not determined. Mr. Howell's explanation may be the correct one.

I was told in the Darcieng area that before the first harvest is ripe the youths of the current age-set, together with unmarried members of the set senior to them (it is possible that sections of a set and not sets were meant) in a district, borrow a homestead and remove from it all the cattle and household utensils to hold a *nak* there. Each youth must bring an ox to be slaughtered or have a half share in one. It is customary for youths to borrow (*gwal*) the oxen instead of taking them from their fathers' herds and a man must not refuse the loan unless his favourite ox (*dil thakde*) is asked for. I was told that youths in the homestead come forward in pairs and declare that they will *gwal* an ox together and are then pledged to carry out their promise by their companions smearing them with ashes. The two youths know in

advance where they can get a fat ox. Each later pays the owner a female calf if it is a large ox and a male calf if it is a small one. Six years are allowed for the debt to be repaid. I was told that by the seventh year all these debts must have been settled as a new *ric*, age-set, will then be holding their *nak* (in Western Nuerland the word *Cuel* is also used).

A month or more is spent in feasting on the meat of the oxen, an ox being killed every two or three days according to the needs of the young men. When we consider that usually Nuer are ashamed to kill oxen for food alone, this holocaust would suggest a ritual purpose and the consideration lends further weight to Mr. Howell's contention. The youths eat all the carcases except the breast, rump, scrotum, and skin, which are sent to their elders. If there is sufficient grain, women of the neighbourhood may bring the youths porridge in exchange for some of the meat, but there may not be sufficient grain for the purpose at the time the camps are held, for the millet may still be ripening. Girls may visit the young men but may not sleep in the homestead.

THE BIRTH OF A LEPER SETTLEMENT— LI-RANGU, EQUATORIA

By A. Cruickshank.

LATE in 1928 the Director of the Medical Service decided that it was time to open up the Southern Provinces to civil medical work, and suggested that the best way to start was with a leprosy campaign in the Zande district where leprosy was known to be rife. I had the fortune to be chosen for this work, and my instructions were to carry out a leprosy survey of the Yambio area, to organise a settlement for the treatment of cases, and to develop general medical work. The result was Li-Rangu, which eventually became the second largest leprosy settlement in Africa.

Routine Sleeping Sickness inspections had been done in the Yambio Area since 1920, and it was decided that the best way to get an estimate of the incidence of leprosy was to organise a full scale Sleeping Sickness inspection. At these inspections the aim was to see every man, woman and child. The chiefs and headmen were responsible for their attendance and had to explain satisfactorily any absence. With the co-operation of Larken Bey, the District Commissioner, and the help of Warburton Bey, the Senior Medical Officer of Sleeping Sickness Control, the whole area was quickly inspected, a total of 59,935 examined, and 1556, or 2.8% of the population, were found to be infected with leprosy. The Azande soon realised we were on the outlook for this disease, and fearing some fresh restrictions on their mode of living, they deliberately hid cases, so I felt justified in planning for double that number. However once the settlement was established and popular, the opposite took place, and there was a clamour for admittance ; many and ingenious methods of simulating leprosy patches were discovered.

The problem now was to find an area big enough and sufficiently central to house all these lepers. With essential relatives the number to be catered for was in the region of 4000 ; this eventually rose to 4500.

The District Commissioner and I pored over maps and finally chose three areas for exploration, and with carriers I set off on foot to survey them. Finally we chose an uninhabited area of some 30 square miles which had good timber and several permanent streams and was only 18 miles N.E. of the district headquarters, Yambio. The plateau chosen for the hospital and offices was at the head of the Rangu stream and from it the settlement derived its name "*Li Rangu.*" "*Li*" is the Zande prefix meaning "head" or "source."

On the 4th of February 1929 I set off from Yambio with 110 carriers. These carried on their heads besides my personal baggage, 3000 lbs. of eleusine, the local grain, axes, hoes, carpenters' tools, brick making moulds, sacks of salt, and hospital equipment. By the time I arrived an advance party had cleared a small area and erected four grass huts, and one of these was to be my home and office for the next few months.

The first essential was communication with the outside world. The nearest motor track was 6 miles away. A route to this was quickly surveyed and a gang put on to cut down the trees, remove the iron-stone boulders, bridge two streams, and flatten out ant-hills. The District Commissioner had arranged for ample labour. The standard rate of payment then was one piastre per day. In four days' time gangs had been organised for road-making, brick-moulding, clearing building sites, collecting timber, bringing in roofing grass, and preparing vegetable gardens. The experience of previous large artificial settlements, particularly that of Source Yubo, had warned us of the danger of divorcing large numbers of the people from their normal tribal life and from the control of their own chiefs and headmen. It was therefore decided that each tribal chief should have a distinct area of the settlement allotted to him, and that he would, from his own lepers, appoint a headman as his representative. This policy proved most successful and led to the chiefs taking an active interest in the settlement, and in the lepers feeling they were still part of the tribal community ; it also simplified the problem of tracing contacts and absentees, and in settling cases. As soon as practicable a leper native court was set up, and all the numerous peccadillos of such a settlement were dealt with by the lepers' elected representatives, instead of by a doctor with no legal knowledge, with little knowledge of the language and customs, and little time to worry over the niceties of the law. To enable me to run the settlement I had been invested with the powers of a third class Magistrate, and before the native court started I enjoyed the daily "office"; I believe that most of my decisions were just, even if not always legal.

Larken Bey arrived one day with a deputation. Although the area was uninhabited the white ant-hills all had recognised owners. These ant-hills are a source of income and food. The flying ants emerge from their homes in the early rains. Little pits are dug all around the hills, fires lit in them, and the emerging ant stretching its virgin wings is attracted to the flame and falls into the fiery pit. The roasted bodies are a delicacy, and the oil obtained by crushing them makes an excellent

cooking medium. It was agreed that the settlement should acquire the ant-hill rights, and that the owners be expropriated and compensated. Larken and I tramped many solemn miles through the bush locating, apprising, arguing and pricing these potential gold mines. Prices ranged from a half piastre for a tiny one to thirty piastres for the largest. I shudder to think to what item in the budget the cost was debited. It was felt that no sane Financial Secretary would pass "To buying of Ant-Hills."

After a detailed survey of the area and careful estimation of all water points, the final layout of an inner and an outer circle was decided on. Within the inner circle were to be housed all severe and mutilated cases of leprosy, the leper hospital, the main hospital stores, offices, laboratory, prison, dressers lines, shops, school, church, and Medical Officer's quarters. The outer circle and radiating roads were to accommodate all the rest of the lepers.

How full our days were then ! We soon realised that the quickest way to popularise the settlement was to supply meat to this meat-starved population. As no domestic animals, apart from dogs and chickens, could be kept because of tsetse fly, meat had to be obtained by the gun, and this meant many a dawn trek through the sopping bush. An extract from my diary at the end of the first three weeks will give an idea of the multifarious activities connected with the constructing of such a settlement.

4.30 a.m.—Off with Saboon, reputed best tracker available. Marched for an hour N.E. through sopping wet grass. Flushed a bush-buck and a pig. Came on buffalo spoor and after 15 minutes in the dim light of dawn saw a fine bull. Dropped it with a solid from my 350. Saboon wisely would not let me go near it till I had put in a second one — just to make sure. Great rejoicing at this mountain of meat.

Returned 7 a.m., changed, had a cup of tea, and off by bicycle round the work gangs. Brick-making progressing ; Mattias now reached 600 a day. Pegged out a new drying shed, and sent off a gang for roof-poles. To carpenter's : Boxi has now got in 2 mahogany trees and is digging a sawing pit. Visited bridge on main road and laid the last log girder (photo). Surprised the stonecutters : good progress since last rain which has softened the iron-stone (the iron-stone was hewn into building blocks by local masons using old axes).

Sent off another 100 men for thatching grass.

9.30 a.m.—Breakfast. 10 a.m.—Interviewed "black" Mohamedain of Yambio who wished to open a shop here. Admitted and charted up 8 lepers (it took some 20 minutes to examine, go into the history,

and record in detail each case. As numbers began to increase, this was found to be a most time-consuming and tedious task). Allotted housing sites for these and their relatives. (Each leper was given a plot of land and ten piastres for building expenses. Only mutilated or severe cases had their huts built for them).

Opened an abscess.

1 p.m.—The meat arrived and it took a tedious hour to portion it out justly, but the hungry rapture with which it was received recompensed for the labour.

2 p.m.—Office. 2 cases of theft. 3 of adultery. Took on 3 new *terebai* and 2 dresser trainees (*terebai* is supposed to be a corruption of the French *travailleur* and designated a permanent labourer or artisan).

3 p.m.—Lunch. Buffalo kidney and sweet potato.

3.30 p.m.—Walked the 6 miles to where my car was parked under a tree, motored to Yambio, collected 20 young mango trees and banana shoots, some Crittall windows, saws and nails, and returned to Rangu — another 6 miles to walk. Arranged for the start of an orchard.

6.30 — 8 p.m.—Office. Making out indents for building stores, arranging work gangs for the next day. Filing leprosy cases.

8.30 p.m.—Dinner and bed.

After a short tuition from the versatile and most helpful missionaries at Yambio, particularly, the late Rev. Canon Gore, I essayed brickmaking at Rangu. Bricks can be made without straw but usually we mixed chopped up grass with the puddled clay. Into the first kiln went 30,000 mud bricks, and the fires started. On the 10th day a bull was slaughtered (imported from the Dinka country) to propitiate the god of brickmaking, and in front of the assembled chiefs the kiln was opened — and behold lovely red bricks, strong and durable ; so that hurdle was passed and brick-making became a routine.

As already mentioned road making was a priority job and in twenty days time the cut to the main Yambio road had been cleared of thick bush, stumps removed, the surface levelled, two bridges with iron-stone piers and great *banga* trees as girders built — good going for amateur labour. On February 25th I decided to open the road by driving my Citroen car from its garage under a spreading mahogany tree to the centre of Rangu ; and a little publicity for the settlement was considered desirable. The three most important chiefs were given seats in the car and we drove in state slowly into Li-Rangu's new market square. Here the drums were throbbing, and the young girls in new dresses of bunches of cassava leaves fore and aft, and the young blades in their bark-cloth " plus fours," danced to the merry tune.

An issue of rock salt was made to all workers and lepers to mark the occasion. Li-Rangu was now on the map.

As already mentioned, once the settlement became popular there was a clamour for admission, and a new form of malingering was discovered. Various plant juices were rubbed into the skin which caused areas of erythema, or superficial burns were deliberately endured in the hope of simulating the early forms of leprosy. To combat this a panel of headmen was appointed to go into each case before it was submitted to me, and I soon learned that I could rely on the judgment of these keen amateur clinicians. Hopeful aspirants used to consult the oracles on their chances of admission for the Azande rarely took any big step in life without recourse to the oracles or propitiating the spirits ; however, even a favourable answer was not sufficient, and few non-genuine cases got past the advisory council. A consulting leprologist who visited the settlement was amazed at the knowledge of leprosy which this amateur body had acquired. It certainly saved me many weary hours of investigation.

Gradually the settlement grew, and I got the help of Kaimakam Yunis Bey, a Syrian doctor, who proved a tower of strength in administration, building and agricultural pursuits.

Lepers started pouring in, and the task of charting, housing, feeding and treating them, as well as training staff, building a hospital, houses, stores, etc., taxed the energies of an inadequate staff. All office work had to be done personally, paysheets made out, all payments supervised, the chest checked, all stores indented for and taken on charge. A lorry was sent to help with the carrying of stores, bricks, etc., but no driver, so a driver had to be taught. All running repairs had to be done personally and I spent many dirty hours under cars taking off broken springs and fitting new ones.

By the end of eighteen months of continuous effort it was felt that the settlement was firmly established as part of the life of the community, as well as being the medical centre of the area. What had been accomplished in that time ? The entire population had been inspected twice, a new area had been surveyed, forty miles of motor road with numerous bridges made, thirteen hundred lepers happily housed and fed, five hundred of whom had received continuous treatment for one year. A hospital of eighty beds, laboratory and operating theatre had been built. A two-storeyed house, numerous stores, houses for dressers and artisans had been constructed, a church, a school, a chief's court started, wells had been dug, the beginnings of a dairy herd collected, hundreds of fruit trees planted, gardens and large areas of cultivations

got going, and two shops opened. The kiln had fired over a million bricks for these various enterprises. Some forty Zande dressers had been trained in the elements of nursing and in the giving of injections, and some fifty major operations had been performed.

The work was onerous, often interrupted by bouts of malaria and of dysentery, the life lonely, the conditions of living at first uncomfortable and primitive, but the feeling of having created a medical and leper centre which gave promise of alleviating the crippling scourge of leprosy, and of the many other prevalent disease conditions, was recompense in full.

A COLLECTOR'S NOTES ON THE LARGE LAND SNAILS OF THE ANGLO-EGYPTIAN SUDAN

By J. D. Tothill.

INTRODUCTION

TRAVELLERS and those who live in the Sudan south of the desert, and particularly south of the latitude of Kosti, frequently see the empty shells of snails lying about on the soil, after annual fires have exposed the surface. Sometimes the ground is literally strewn with them, there being hundreds to an acre of land. One soon becomes aware that they are of different shapes and that some are only found in certain situations—such as clay soils subject to shallow flooding in the rains.

In 1904 Richard Hagg published the results of collections made between Shendi and Fashoda by the Swedish Zoological Expedition, and in 1914 Mrs. Jane Longstaff published an excellent account of collections she had made during several journeys between Khartoum and Juba. The late Dr. Myers did some collecting in recent years in Equatoria Province, but so far as the writer is aware, the results have not been published.

Systematic collections have now been made by the writer and his friends, particularly Oscar Snow, Gerald Andrew and H. Ferguson, in all provinces of the Sudan. These have been studied and named, and sorted out into locality collections, and the results are here presented to supplement those of the pioneers mentioned above.

A map showing the distribution of each species has been made and the dots on the map, indicating places of collection, are represented by actual specimens in a collection which has been presented to the Natural History Museum in Khartoum, for the use of students. It is this collection on which these notes are based.

The man in the field often has to travel in the dry season when nothing but empty shells are lying about, the inmates having died of old age, or having been caught in a ground fire and so prevented from going to earth for the dry winter months. In this paper therefore only the shells and not the inmates are discussed.

As to colour markings, even in the wet season, when the molluscs are seen crawling about, it soon becomes clear that they vary greatly on shells of the same shape and that they are of little value for identification. Add to this the fact that the colour markings are frequently burned off in the grass fires, and it becomes clear that it is best in the field to learn to recognize species without the use of markings.

In the field one naturally comes across snails of all ages, from those newly hatched from their eggs to adults that may be anything up to four inches long. After a good deal of practice one learns to recognize the juveniles of the different species, but one can nearly always find adults, and it is with adults only that this paper deals.

Adult shells of the snails discussed vary in size from one to four inches long. There are in the Sudan a number of species of land snails that are smaller, but no adequate collections of these have as yet been made, and they are not discussed in this paper.

A KEY FOR DETERMINATION OF SPECIES.

The following key is intended to enable any field naturalist to name from the adult shell any large species of land snail he may encounter in the Sudan.

The names of parts used in the key are illustrated in diagram A in Fig. 1. In using the key the specimen is to be held out in front with apex upward, and so that one faces the aperture. Diameter is measured from A to B, length from X to Y. Spiral striae are fine lines running parallel with the suture.

1. Spire either extended or compressed but the aperture always to left; when looking straight down on the apex the spire coils to the left. Genus *Lanistes*. See 2 (below).
—Spire extended or compressed but the aperture always on the right; when looking straight down at the apex the spire is seen to coil to the right. See 3 (below).

2. Spire well extended, the shell more than one and a half times as long as broad and up to 77 mms. (3 inches). *Lanistes ovum* Trosch. F. (Fig. 2)
—Spire so compressed as to be scarcely visible; the shell broader than long and up to the size of a golf ball. *Lanistes carinatus* Oliv. G. (Fig. 2)

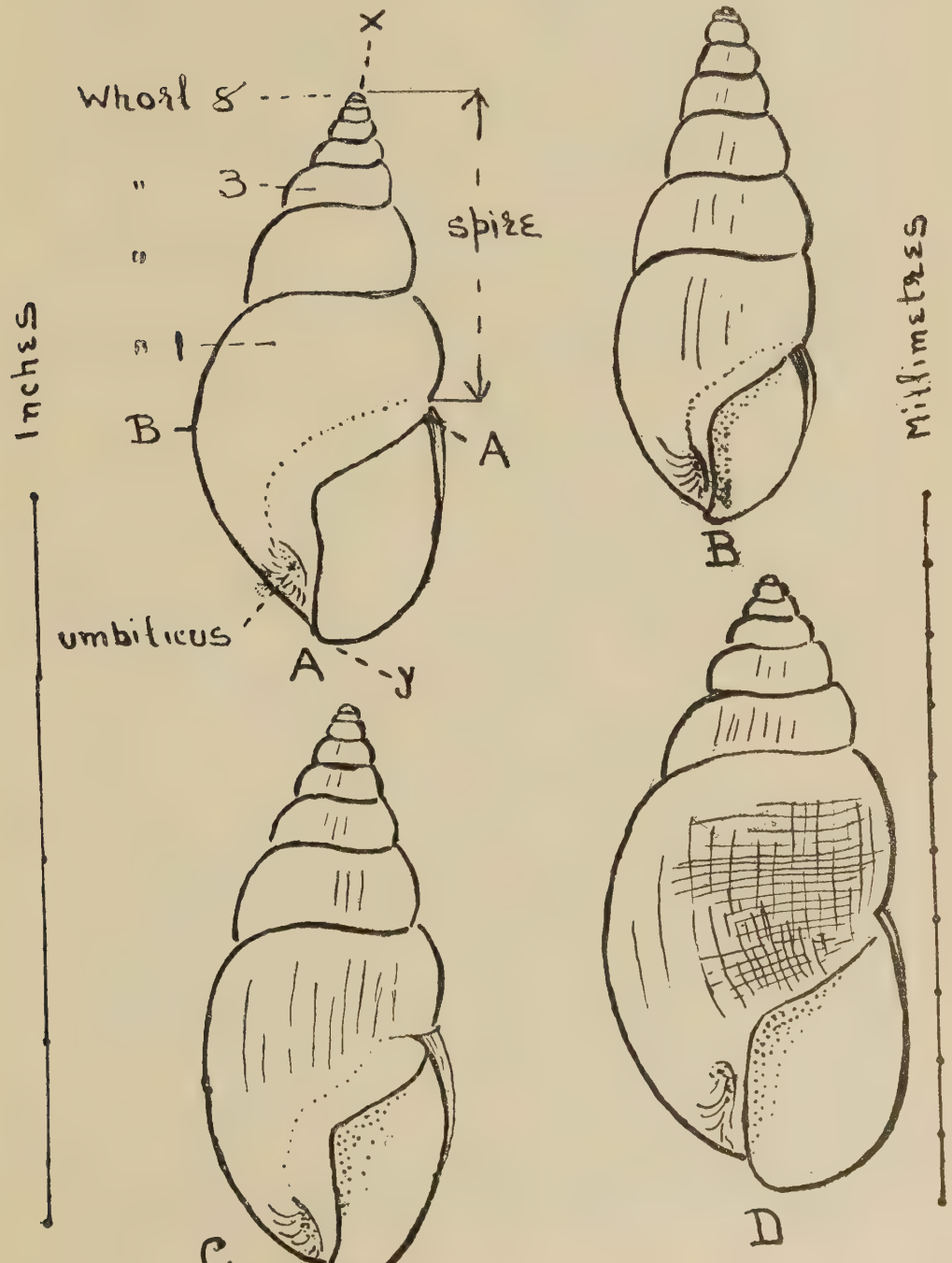
3. Spire greatly compressed so that the shell is much less than twice as long as broad, the umbilicus very conspicuous, a globular shell as large as a medium sized apple. *Ampullaria wernei* Phil. H (Fig. 2)
—Spire extended so that the shell is almost twice as long as broad, the umbilicus inconspicuous. See 4 (below).

A Diagram of a shell to show the names of parts used in the key. Length in the key means x to y; diameter means the distance A to B measured by calipers.

B *Limicolaria flammata* Caill. A rather large specimen measuring 76 mms. in length and 26 mms. in diameter.

C *L. festiva* Mts. An average adult 82 mms. long 32 mms. in diameter.

D *L. kambeul* Brug. An average adult 89 mms. long and 41 mms. diameter.


x
Whorl 8
" 3
" 1
spire
B
A
umbilicus
A
y
B
C
D
Inches
Millimetres

4. Whorls five, shell so stout as to be half as broad as long, the largest land shell in the Sudan. *Burtoa nilotica* Pff. E (Fig. 2)
—Whorls eight to nine, shell much less than half as broad as long. See **5** (below).

5. Greatest diameter 24 mms. (1 inch) or slightly less, length up to but rarely exceeding 72 mms. *Limicolaria flammata* Caill. B (Fig. 1)
—Greatest diameter more than 24 mms. (1 inch). See 6 (below).

Type 6. Smooth shell with spiral striae absent or inconspicuous: length up to 84 mms. (3.5 inches) and not less than 2.5 times as long as broad. *Limicolaria festiva* Mts. C (Fig. 1)
—Shell slightly rough to the touch, with a matt surface and with the spiral striae easily visible to the naked eye: length up to 102 mms. (4.25 inches) and not more than 2.3 times as long as broad.
Limicolaria kambeul Bruguiere. D (Fig. 1)

DISCUSSION OF SPECIES.

The species will be discussed in the order of this key. It may be noted that *Lanistes* and *Ampullaria* are amphibious snails that thrive on clay lands subject to flooding; they breathe by gills as well as by lungs and have a heavy, tightly fitting door or operculum that enables the aperture to be closed in the dry season. The remaining genera *Burtoa* and *Limicolaria* are true land snails that cannot survive long immersion in water as they breathe only by lungs and have no operculum.

A. THE AMPHIBIOUS MOLLUSCS.

Lanistes ovum Trosch.

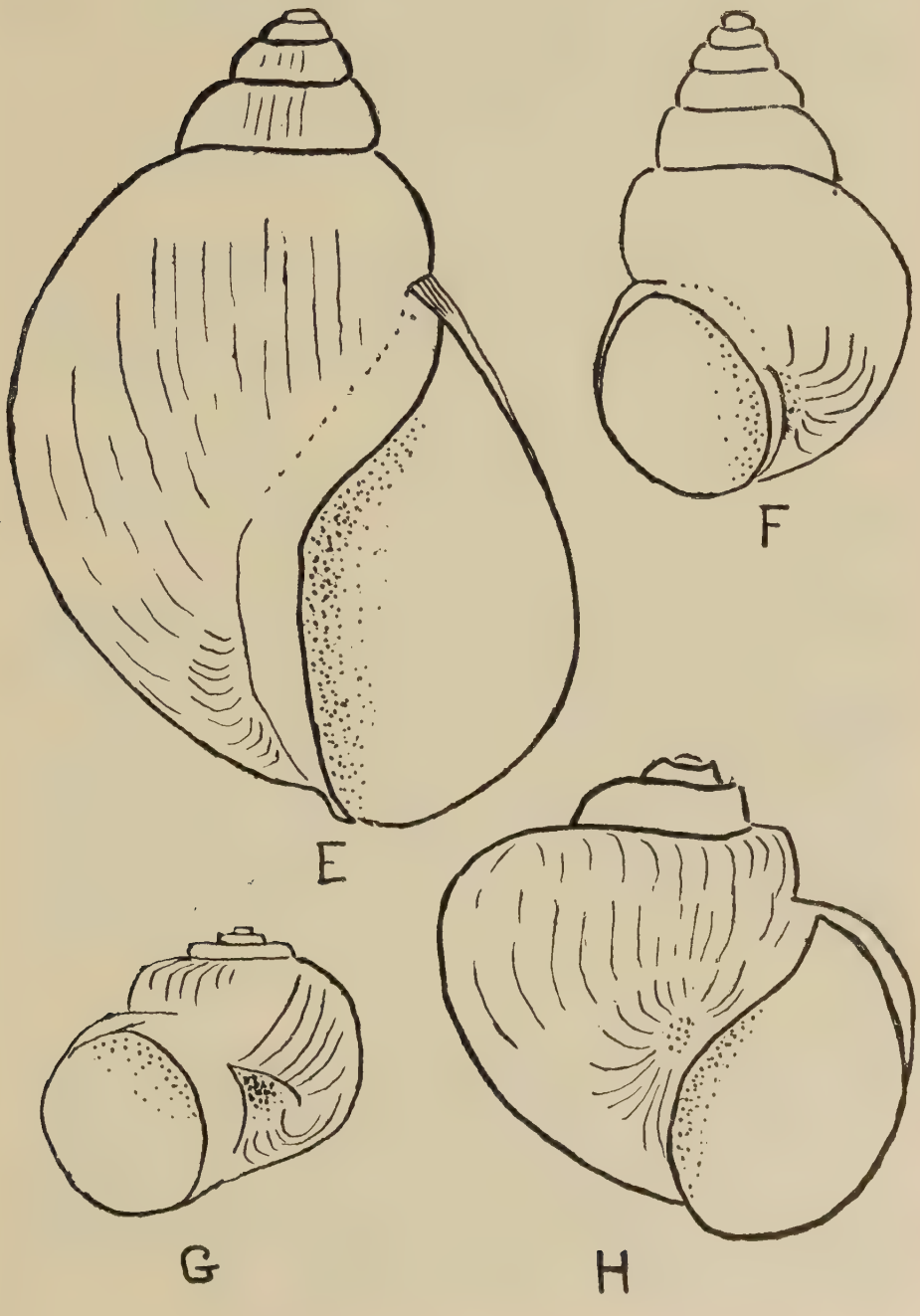
Habitat and habits.—This large species, with a pale to dark olive green left-handed shell with a considerable spire, lives on clay plains subject to annual flooding and on which the flood waters remain up to three feet deep for three to four months in the year. It sometimes occurs in isolated ponds. Its strong, closely fitting door or operculum, and combination of lungs and gills enables it to breathe in water or in air, but it normally burrows into the wet clay as the waters disappear, to remain dormant until the onset of the next wet season. Nothing

E *Burtoa nilotica* Pfeiffer: drawn from an average sized specimen 100 mms. long and 56 mms. in diameter.

F *Lanistes ovum* Trosch: drawn from an average sized adult 63 mms. long and 37 mms. in diameter.

G *Lanistes carinatus* Oliv.: drawn from an average sized specimen 34 mms. long and 33 mms. in diameter.

H *Ampullaria wernei* Phil.: drawn from a medium sized adult 70 mms. long and 48 mms. in diameter.


E
F
G
H

is known of its feeding habits except that it is frequently found in great numbers in the lowest parts of the plains of the peri-Sudd where tall grasses occur as the dominant vegetation.

Fossil distribution.—This species has not been recovered as a fossil in the Sudan or, in so far as the writer can discover, elsewhere in the world.

Distribution in the Sudan. (*See* Fig. 3).—In the Sudan the species has been collected only from the Nuba Mountains, the clay plains of Darfur Province lying to the south of Jebel Marra that drain to the Nile, and from the clay plains of the peri-Sudd. The absence from the upper clay flood plains of the Atbara and Blue Nile river systems may be only apparent because no collecting has been done where the railway crosses the Dinder and Rahad rivers, where the habitat would appear, from the train, to be ideal.

World distribution.—M. Connolly, (1939), records this species from Lorenzo Marques, Zululand, Transvaal, Bechuanaland and Southern Rhodesia.

Comment on distribution.—This species appears to be confined to the African tropics. Its distribution in the Sudan, particularly in isolated ponds, seems to presuppose the aid of river-dwelling birds. Ducks and herons are abundant, seasonally, in the Sudan wherever water is found, although most of the ducks are winter migrants. The most probable distributors appear to be the herons which stand in the muddy edges of ponds and streams where newly hatched eggs of *L. ovum* Trosch must occasionally abound, but the writer is unaware of any examinations having been made of mud from the legs of water fowl. The aid of birds seems also to be required to account for the wide distribution in latitude from Zululand to the Sudan across the watersheds of a formidable series of river systems.

The Golf Ball Snail Lanistes carinatus *Oliv.*

As the distinctly rotund shells of adults are nearly as large as a golf ball it seems legitimate to call it the Golf Ball Snail. It is amphibious, breathes by lungs as well as gills, has a tightly fitting strong door or operculum and occurs in precisely similar situations as does the Apple Snail, the main requirements being shallow water for several months of the year and a clay bottom. In the peri-Sudd area of the Sudan it sometimes occurs in great numbers on grass plains that are normally subject to flooding for three months each year.

Fossil distribution in the Sudan.—Fig. 3 on p. 174 of *Sudan Notes and Records* Vol. XXVII, shows a wide fossil distribution in the top six feet of the soil of the Gezira above the 382 metres contour. It has also been collected from soil pits at Um Gerr, Aliab, and from Dudiya and Nahud. It has not been collected as a fossil from any station in Darfur Province. It is recorded from the Miocene beds of Lake Victoria and in Recent and post-Pliocene beds in Egypt (*Journ. Linn. Soc.* Vol. XXXII, p. 240).

Present distribution in the Sudan.—The distribution of the living species in the Sudan is shown on Fig. 12 on p. 183 of *Sudan Notes and Records* Vol. XXVII. It will be noted that its distribution is much more restricted than is that of *Ampullaria*.

World distribution.—The species is recorded from Egypt, from the Sudan, from Lake Victoria in Uganda and, strangely enough, from the Tana River (*Journ. Linn. Soc.* Vol. XXXII May 1914, p. 240).

Comment on distribution.—The species has existed since Miocene times, and seems to have no difficulty in travelling up or down the Nile valley. Its inability to reach Lake Tanganyika and the Congo River system is in strange contrast with its presence as a fossil at Nahud and in the Dudiya depression in Kordofan and in the Tana River.

The Tana River occurrence and subsequent disappearance seems to point to there having been a physical connection with Lake Victoria in one of the pluvial periods of Pleistocene times and to this being followed by a dry period in which the River Tana dried out so as to kill off the *Lanistes* population, and that since the rejuvenation of the Tana River the species has been unable to travel over the dividing watershed. The presence of fossil, and absence of living, crocodiles in Lake Edward have to be accounted for similarly.

Had birds such as herons been carriers one would expect the species to have a range more like that of *Ampullaria*.

The Apple Snail Ampullaria wernei *Phil.*

Specific identity.—The species varies considerably in the degree of extension of the spire, but in my collection forms with the longest and forms with the shortest spires are connected by so large a number of intermediate forms as to preclude the possibility of there being more than one species in the collection. There seems therefore no justification

for maintaining *A. kordofana* Phil. as a separate species. A specimen closely resembling *Ampullaria* sent to me by Major Connolly labelled *Pila ovata* Oliv. collected from Lake Duma has a much longer spire and is clearly a distinct species, but no specimens with so long a spire have as yet been collected in the Sudan.

Habitat.—The apple snail, as *A. wernei* Phil., is sometimes called from its size and olive green colour, occurs in ponds, lakes and rivers that have a clay bottom. When the rivers or ponds dry out, the animal buries itself in the mud and, as a result of possessing both a very strong closely fitting door or operculum and lungs, it is able to survive long periods of drought.

Food plants.—In an aquarium the species will eat aquatic plants of various kinds, but in nature it frequently occurs in vast numbers on flooded grass plains where aquatic plants do not occur, and in these situations it probably feeds almost entirely on grasses.

Fossil distribution in the Sudan.—As shown in Fig. 2 on p. 173 of Vol. XXVII of *Sudan Notes and Records* the species is widely distributed in the upper six feet of the soil of the Gezira plain above the 382 metres contour.

Present distribution in the Sudan.—Fig. 11 on p. 182 of *Sudan Notes and Records* Vol. XXVII shows the species to be widely distributed in the Sudan where the conditions are favourable.

World distribution.—Connolly (1939) has recorded the species from Uganda, Zanzibar, Mozambique, Belgian Congo, Nigeria, Ubangui, and Abyssinia. It appears to be confined to, but widely distributed throughout, tropical Africa.

Comment on distribution.—The ability of the Apple Snail to find its way to the Wadi Hawar (v. A. J. Arkell *Sudan Notes and Records* Vol. XXVI p. 340), to remote water holes and temporary lakes in Darfur Province and to cross the sea to Zanzibar and Mozambique, points to water fowl as the probable carriers. Of the water fowl inhabiting Apple Snail territory in the Sudan, duck come to mind as being the most abundant and the most widely distributed ; the writer, however, cannot recall having shot a duck in these areas with mud adhering to the legs. Herons also frequent all these situations, including the remotest ponds, and as they stand in mud and rise directly therefrom, they may prove to be the carriers.

The eggs of *Ampullaria* have not been seen, but there is a figure by A. H. Cooke on p. 125 of Vol. III of the Cambridge Natural History of an *Ampullaria* egg-mass adhering to a small stem. If the Sudan species deposits its eggs in this manner then distribution by birds probably occurs shortly after hatching.

B. THE LAND SNAILS.

Burtoa nilotica Pfeiffer.

Specific identity.—There are at date of writing fifty two specimens in the writer's collection and many others have been seen in the field. While there are great differences between specimens that have just hatched out and a four inch long adult, yet, among the adults there is little variation in form, and there is no doubt that all the Sudan specimens are referable to a single species.

Habitat.—This species, which is the largest of the land snails of the Sudan, lives quite happily near Shambe on termite mounds that rise out of a plain that is subject to annual shallow flooding, but its normal habitat is well drained forest land that may be flat or hilly.

Eggs.—Several dead adult shells have contained eggs so large as to be taken for lizard eggs. These have a thin, rather brittle shell, and measure one centimetre long and 0.7 centimetre wide, are oval in shape and pale brown in colour. Fifteen is the maximum number that has been seen in one shell.

Distribution in the Sudan. (See fig. 4).—A single specimen has been collected in the Fung ; it is somewhat scarce in Darfur Province, where a few specimens have been collected south and east of Jebel Marra ; it becomes generally if somewhat thinly distributed in the peri-Sudd area, where it escapes in the wet season to the numerous termite mounds ; and becomes generally if somewhat thinly distributed through the broad-leafed forest zone of the Nile Congo divide. It is not a gregarious species, and it is unusual, except in the case of juveniles, to see two specimens within a hundred yards of each other.

World distribution.—There is a specimen in the collection collected by Dr. W. J. Eggeling from Busingiro on the Masindi to Butiaba road in Uganda. It is recorded by Mrs. Jane Longstaff (*Linn. Soc. Journ.*

Zool. Vol. XXXII May 1914 p. 250) as occurring throughout the Lake region of Central Africa ; Connolly records it from Matabeleland and Germain from the Lake Chad area. The species is therefore confined to the African continent, where it probably occupies suitable localities throughout the tropics between about 13°N. and 20°S. latitude.

Comment on distribution.—In the case of this wholly terrestrial species, laying very large thin-shelled eggs, it is improbable that birds or animals or water assist in its dispersal, and one is left with the probability that it has achieved dispersal through 2300 miles of latitude and probably a greater mileage of longitude by crawling inches at a time.

The genus limicolaria

The validity of species.—When one consults the literature on Sudan *Limicolaria* one is met with a confusing list of specific names, most of which are based on colour markings and on the size. As the collection grew it became clear that not only colour markings but also the size of adults were of little value for distinguishing species because both are subject to great variation.

The collection was therefore sorted out in the first instance without reference to the literature and without attempting to assign names. It is now clear that there are certainly two and perhaps three morphologically distinct species in the Sudan, and names have been assigned to these after correspondence with Major M. Connolly and a most profitable visit to him at the Natural History Museum in London where specimens were examined and compared.

There is no question about the distinctness of *L. kambeul* Bruguiere, both because it is wider proportionally for its length in all ages, and because the spiral and cross striae are more strongly developed so as to give a matt rather than a shiny surface and a slight roughness to the touch.

The specific distinctness of *L. flammata* Caill. and *L. festiva* Mts. is, however, not so certain because there are in the collection two specimens, one from the Fung and one from Kaka in the Upper Nile Province, that seem to be intermediate. They could be called giant *L. flammata* Mts. slightly longer than normal for breadth. On the other hand, the overlap of dwarf *L. flammata* Caill. and normal *L. festiva* Mts. in the Yambio to Yei part of the Nile Congo divide suggests specific distinctness. From a field naturalist's point of view it is useful to retain the two names even though they may turn out to be of varietal

rank, because *L. flammata* Caill. flourishes on the better drained grass plains of the Blue Nile and Kassala Provinces, becoming a dwarf in the broad leafed forest belt of the Nile Congo divide, whereas *L. festiva* Mts. flourishes in the broad-leafed forest, occurs very sparingly in the hills of Kordofan Province, and has not been recovered from the grass plains of the Blue Nile and Kassala Provinces.

Limicolaria flammata Caill., 1823.

Habitat and habits.—This species inhabits the well-drained parts of the tall grass cracking clay plain lying between the 400 and 800 mm. isohyets (16 to 33 inches). In suitable situations it occurs in great numbers, and one can frequently collect a dozen specimens in as many paces.

The species varies greatly in size. On the fringes of the optimum area it becomes dwarfed, and dwarfs are characteristic of Nahud, of the semi-dry papyrus swamp at Bor, of the termite hill situations in the annually flooded area between the Sudd and the ironstone plateau in Equatoria Province, and of the broad-leafed forest area between Yei and Yambio. The colour markings on these dwarfed specimens vary greatly, but these dwarfs are clearly referable to this species, because they never occur with full size specimens, and because the dwarfing can always be accounted for by the situation being too dry, too wet, or lacking in food plants.

This species feeds almost exclusively on the several species of tall grass characteristic of the so called '*hariq*' areas (for details see discussions by F. W. Andrews and J. R. Burnett in Tothill's "*Agriculture in the Sudan*," Oxford University Press, 1947).

Toward the end of the rainy season the animal goes to earth, where it hibernates until the onset of the rains of the following year. How long individuals live is not known, but certainly for more than a year, because several age groups can be seen crawling about at the time of emergence from the earth at the beginning of the rainy season.

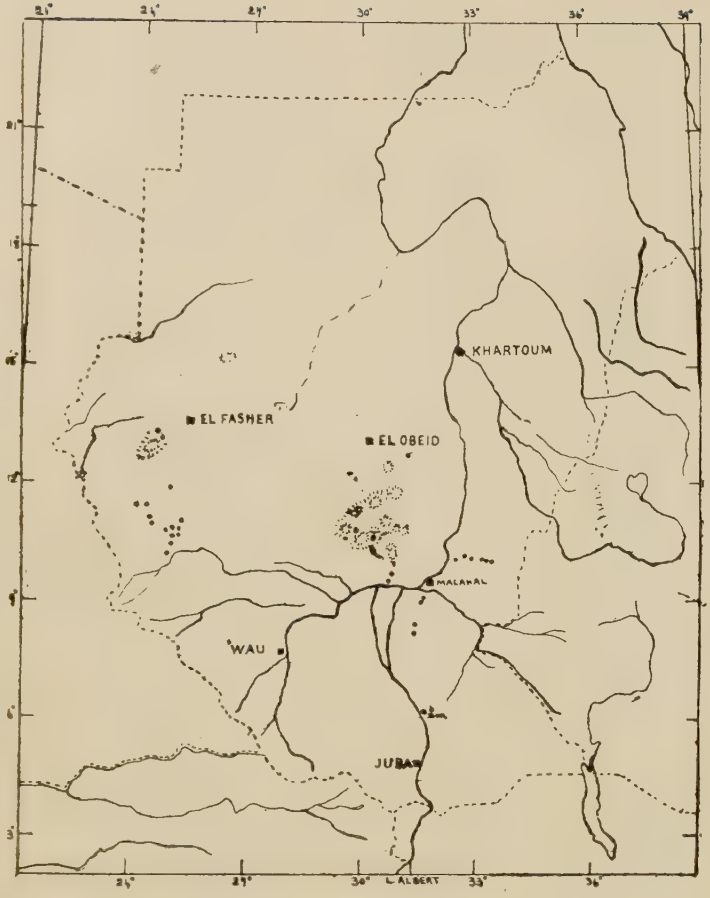


Fig. 3. Distribution of *Lanistes ovum* Trosch in the J. D. Tothill collection, February 1947.

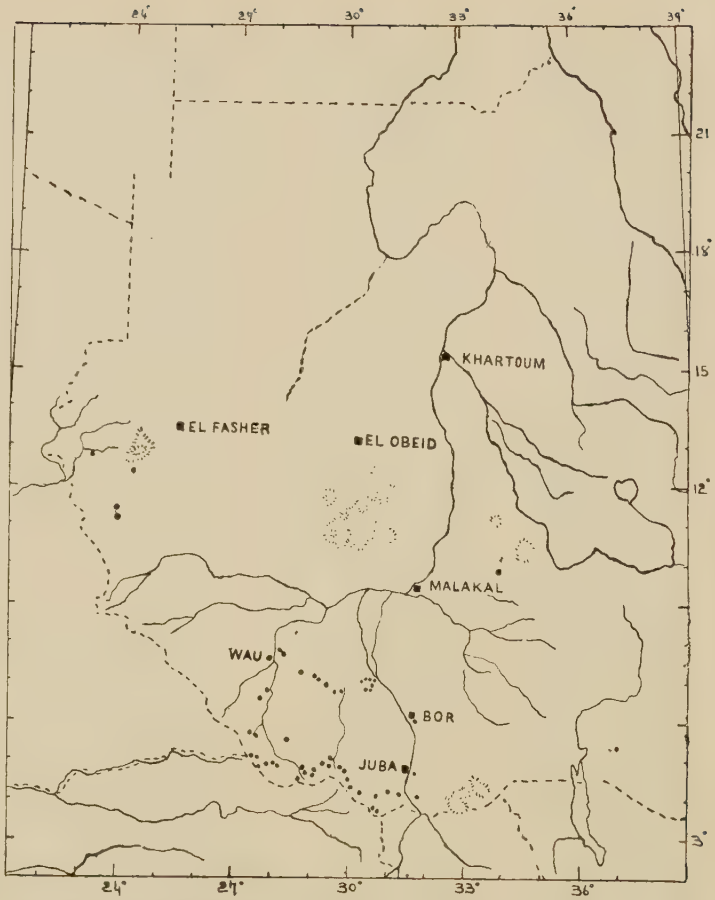


Fig. 4. The distribution of *Burtoa nilotica* Pfeiffer in the J. D. Tothill collection, February 1947.

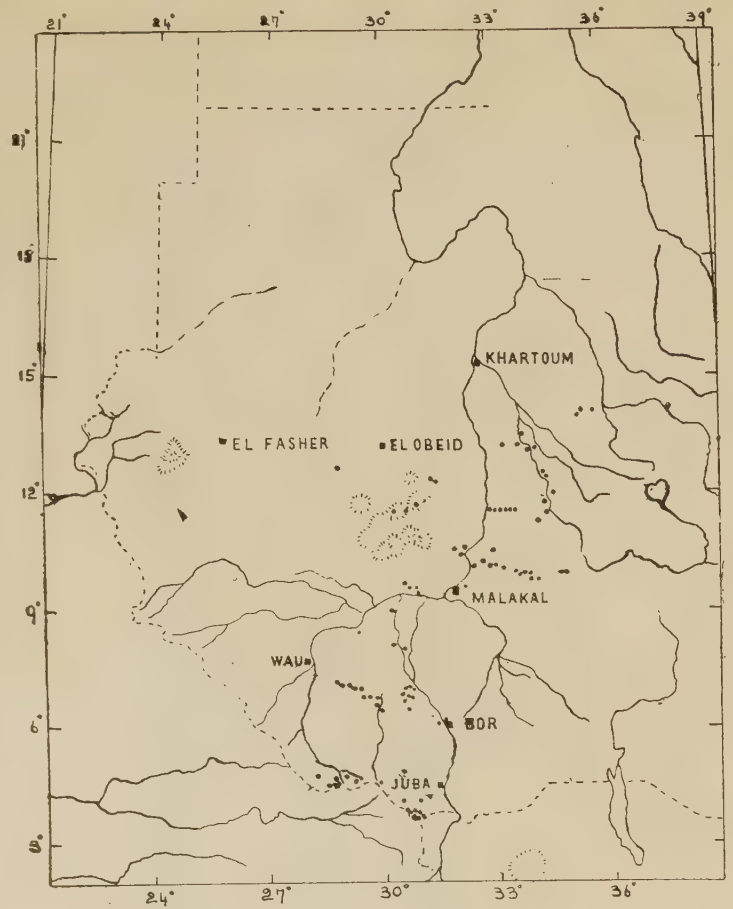


Fig. 5. The distribution of *Limicolaria flammata* Caill. in the J. D. Tothill collection in February 1947.

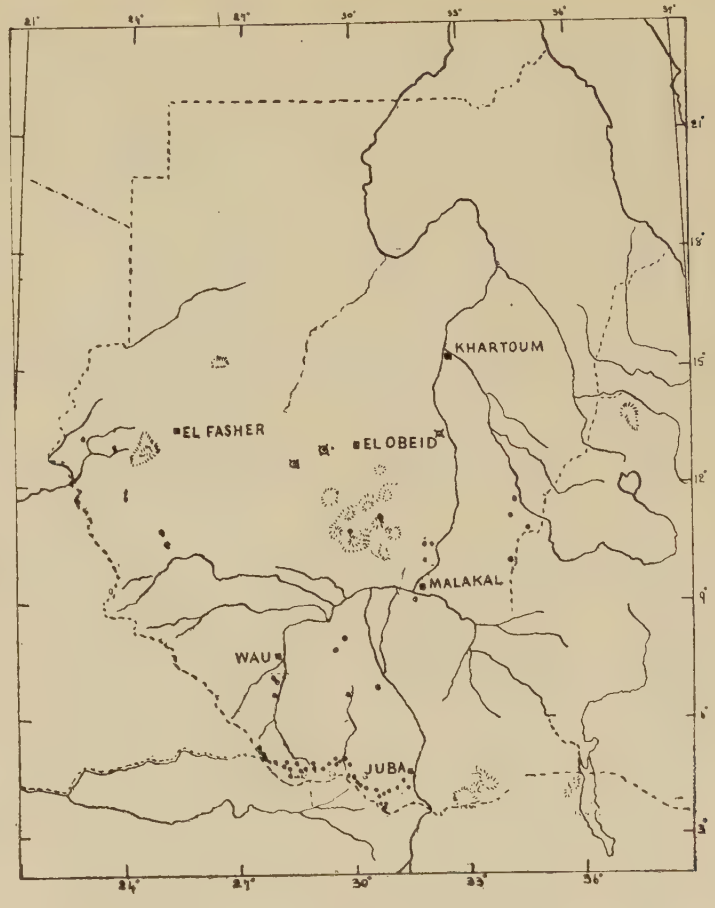


Fig. 6. The distribution of *Limicolaria festiva* Mts. in the J. D. Tothill collection in February 1947. (Starred dots are fossils.)

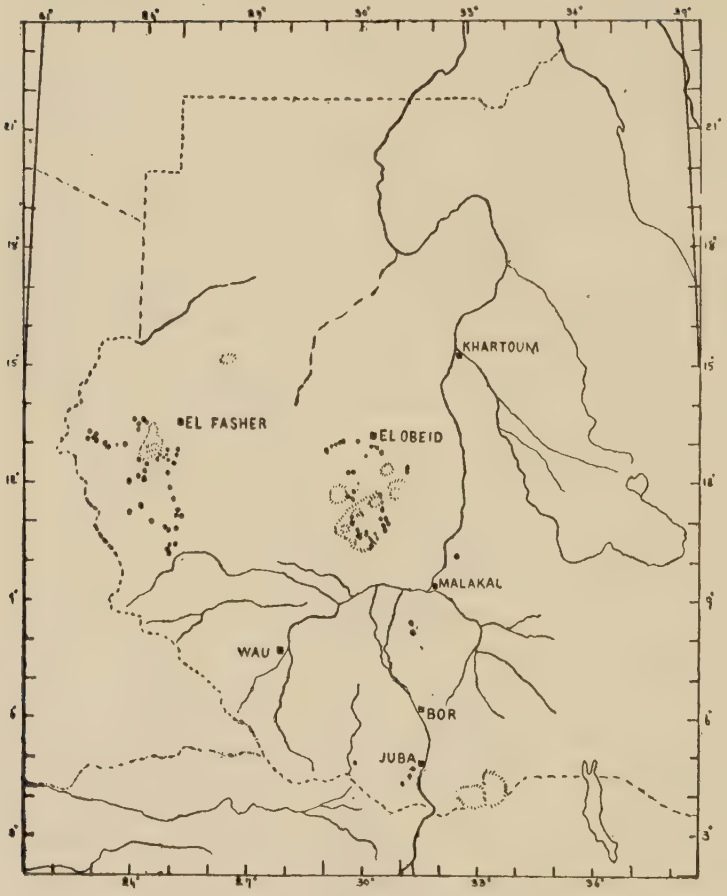


Fig. 7. The distribution of *Limicolaria kambeul* Brug. in the J. D. Tothill collection in February 1947.

Fossil distribution in the Sudan.—The species has been recorded by the writer in great abundance from the soil of the Gezira plain, by A. J. Arkell from an early mesolithic village at Khartoum, and by G. W. Grabham from a site in the desert near station 10 to the north of Abu Hamed (*v.* J. D. Tothill ' Origin of the Gezira Soil ' *Sudan Notes and Records*, Vol. XXVII, 1946).

Present distribution in the Sudan. (See fig. 5).—The map shows that this species has not been collected north of Sennar, that it is very abundant at Gedaref and Renk, and that it occurs (as a dwarf) around

the edges of the Sudd and in the broad-leafed forest of the Nile Congo divide. It is uncommon in Kordofan Province and no specimens have been seen in Darfur Province.

World distribution.—Mrs. Jane Longstaff (l.c. p. 248) records the species as ranging southwards to Lakes Albert and Tanganyika, also to the district between the Lakes and Zanzibar and eastwards to Abyssinia. This should be accepted with reserve until specimens can be compared, because as already mentioned there has been considerable confusion about the species of *Limicolaria*. It is, however, established that this genus is confined to tropical Africa and better represented in the eastern half of this range.

Comment on distribution.—From the habitat, and mode of reproduction from eggs, it can be assumed that neither birds nor water are concerned in the dispersal of this species and that it has spread primarily by crawling. This comparatively restricted area of distribution seems to indicate an origin in Abyssinia or the Sudan. It also suggests that it originated later in time than *Burtoa*, which has spread further over Africa, but prior to the cutting of the east-west river systems by the development of the Nimule to Khartoum part of the Nile.

Limicolaria festiva, Mts.

Habitat and habits.—This species flourishes in well drained parts of the broad-leafed forest zone that have an annual rainfall of sixty inches, and becomes abundant at Yambio.

It feeds on a variety of plants, and has been seen by the writer, often four feet or more from the ground, feeding on *Calocasia*, *Cardamum*, *Sarcocephalus* and *Panicum maximum*, and at Yambio station upon the lush leaves of a number of species of unidentified grasses.

Quantities of juveniles, only just hatched, have been seen by the writer at Yambio in early May together with many adults and half grown specimens. Individuals, therefore, live for at least two years and may live much longer.

In the dry season there is no sign of living specimens, so that the probable rêgime is that in the wet season of May, June, July and August the animals are above ground and active, and that they go to earth for the dry season.

In the wet season these molluscs are definitely active, and can frequently be seen in the daytime four or five feet from the ground on smooth barked trees working round the bole so as to avoid the sun.

Colouring varies remarkably. In the ironstone red-loam area between Yambio and Yei living specimens are sometimes uniformly pale olive, and sometimes gaily marked with bright sepia stripes, and there is every gradation between these extremes. These soils are notably acid and this may have something to do with the colouring. All specimens collected from soils that turn litmus paper blue have by way of contrast been gaily coloured.

In the acid red-loam area also many of the shells are notably thin which suggests a shortage of lime in the herbage.

Distribution as a fossil.—Semi fossil shells have been collected by the writer from soil pits at Kosti and Nahud, and the species is abundant in the soil surrounding the rest-house at Khuai.

Present distribution in the Sudan. (See fig. 6).—As the map shows this species is abundant in the broad-leafed forest zone of the Nile Congo watershed, and occurs sparingly in all Provinces northward to the fourteenth parallel of latitude.

World distribution.—The confusion in names makes it impossible to say how widely distributed this species may be. It is, however, confined to Africa south of 14°N. and does not extend as far south as Southern Rhodesia. Its eastern and western limits astride the equator are not known.

Limicolaria kambeul, Bruguiere, 1789.

Habitat and habits.—The species flourishes in well drained, hilly, forest country lying between the 400 and 800 mm. isohyets (16 to 33 inches). It has not been seen by the writer either on the continental sands of Kordofan and Darfur Provinces, or anywhere in the Sudan on the clay plain of the peri-Sudd, or on the iron-stone plateau of Equatoria Province.

In the Sudan it never becomes abundant and in its areas of greatest abundance it is unusual to find more than one specimen to an acre.

In the dry months the writer has never seen a living specimen on the ground. It evidently spends these months buried in the soil and emerges with the first rains of May to lead an active existence above ground for the duration of the rains. Nothing is known of its feeding habits in the Sudan.

Distribution of fossil specimens.—A single specimen has been collected from a brick pit at Khuai to the west of El Obeid.

Present distribution in the Sudan. (See fig. 7).—As the map indicates this species occurs very sparingly in the Fung and around Malakal and at Juba. Although never thick on the ground it is widely distributed south of the fifteenth parallel of latitude in the undulating and hilly parts of Kordofan and Darfur Provinces. Although collecting was confined to a few traverses in each Province the map probably gives a true picture of distribution, because the dead shells are conspicuous objects in the dry season.

World distribution.—The species is recorded from Lake Chad and from Querke on the French border of Liberia.

Comments on distribution.—From the habits of this species it seems unlikely that birds, animals or water assist in its dispersal and probable that dispersal has been achieved in the main by crawling. It is also probable that it arose as a species prior to the break through of the Nile to the north from Lake Albert, as to such an animal the Nile would oppose an effective barrier. On the other hand as the species has not yet spread to Southern Rhodesia it is probably more recent in origin than species like *Burtoa nilotica* that also disperse by crawling but have gone much further afield.

THE CONSOLIDATION AND PROTECTION OF ANCIENT MONUMENTS OF THE SUDAN

By O. H. Myers,

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EACH country in the Near East has a different problem in connection with the consolidation[1] and protection of its ancient monuments; almost all of them have tackled the problem in earnest and made very considerable progress especially within recent years.

Notable work was done in the Levant during the French mandate, and it is hoped that this will be continued by the independent regimes of Syria and the Lebanon. Numbers of mosques, tombs, chateaux and baths have been wisely restored, though plenty remains to be done, particularly in the 'dead' Roman and Byzantine cities. Of particular interest and merit are the completely restored synagogue from Duro-Europus, the Palmyra tomb, and the huge rebuilt gateway from the 'Ummayad chateau of Kafr al Khair, all three grouped in the Damascus Museum grounds, and unforgettable by any visitor.

The excellent Italian work in Libya is well known; and fortunately the tide of war did less damage to the ancient remains there than was at first feared. The extensive work by the local Governments and by Americans in Iran and Iraq must be known to most people from the illustrations which have appeared from time to time in the *Illustrated London News*. Even Aden has now an Antiquity Service, and the centre of its famous system of 'tanks' was fully, if a little unwisely, restored in the last century.

Nearer home, Egypt has the biggest problem of all countries to face — one might almost say half the World's history in stone to be cared for by one small country. In the early days much was done there that is greatly to be regretted, and there are aspects to-day which leave much to be desired, such as the guardianship, for the poverty and cupidity of the guards is easily preyed upon by unscrupulous dealers acting for European and American collectors and Museums. Nevertheless, despite all the destruction that has taken place, there are

[1] In this note, consolidation is used to mean thorough repairs and such restoration as may be necessary to give the building a new lease of life. By restoration, used alone, is meant work carried to the length of restoring the original form of the building. Protection is used with reference to elements of destruction other than human; guarding being a matter the Commissioner has well in hand.

many monuments that now stand firmer and nearer their pristine condition than they have stood for centuries. A big budget provides for more and more consolidation and restoration, and slowly Karnak, Saqqarah, Deir el Bahri, Luxor and other temples are rising again. In Karnak, a complete Middle Kingdom temple has been rebuilt from its débris which was discovered inside a New Kingdom pylon. The column of the Sudanese conqueror Taharqa, overthrown by an earthquake and now rebuilt, is one of the notable sights of the forecourt.

Apart from those Arab states which have never been penetrated by European influence, where the Governments are indifferent to, or in favour of destruction, the Sudan remains the only Near Eastern country where no serious effort at consolidation or protection has been made.

A protective wall has been built round Buhen temple near Wadi Halfa, and one or two excavators have patched monuments as they uncovered them, mostly inadequately, but then this is not the excavators' task. More recently, the Commissioner for Archaeology and his staff, battling with an inadequate budget, have made a start. An old Christian Church at Dongola, already partially preserved as a mosque, has been consolidated, but the paintings are still largely covered, and it needs anti-hornet, anti-bat, and anti-boy protection. Some of the more urgent masonry underpinning in a few of the pyramids and at Massawarat has been well done. For the rest, the work has had to consist of temporary year to year expedients to prevent further damage.

It is clear from the stop-gap nature of these measures that no plan has ever been inaugurated for a gradual but thorough work of consolidation like that of other countries. This is doubtless because the Sudan is a comparatively poor country, but, at the same time, though not poor in monuments, the work to be done in relation to the budget does not present such a difficult financial problem as it does in Syria or Egypt. Chesterton made King Alfred say " .... it is only Christian men guard even heathen things," and this has largely been proved true, especially in such countries as India.

At this stage, the most practical attack on the problem seems to be to cut the losses and to concentrate on thorough consolidation work of the most worthy monuments. The Pharaonic remains, that is those of the Middle and New Kingdoms of Egypt and of the Napatan Dynasty of the Sudan, present the biggest problem and, being the oldest, should be tackled first. The damage they have already suffered since the occupation can easily be seen by reference to F. Frith, *Upper Egypt and Ethiopia*, London, n.d. and *Upper Egypt, Nubia and Ethiopia*, London, 1862, in which there are several photographs of the monuments taken

between 1859 and 1860. Comparison of the present remains with these photographs shows not only the subsequent dilapidation of sites such as Sulb, but also series of Meroitic columns, as at Amarah, which have apparently vanished off the face of the earth, leaving not a chip on the site. This melancholy story is common to all countries ; the difference is that in the Sudan no " reparations " have so far been paid.

A reasonable plan must take into account financial difficulties, and it would probably be wise, even with these early remains, to concentrate on the most important, at least in a first plan. Thus Buhen temple is well enough protected for the time being, and the recently discovered Pharaonic temple at Amarah could be reburied in sand : it is hoped that the latter will soon be fully published, and from then on its value for visitors is insufficient to justify the cost of its preservation above ground. The remaining fragments of Sesebi, Napata, Gebel Barkal, and many other minor monuments, might at a later stage justify protection and minor repairs, but can be left for the present.

To the writer at least, the three outstanding monuments of this period are the great temple at Sulb and the two little ones each side of the cataract at Semnah, with their famous river level inscriptions. The Semnah temples are so surprisingly well preserved that the task of complete restoration would be both simple and inexpensive.

Sulb is a serious problem. It demands scientific excavation which should take place contemporaneously with the work of restoration. It is possible that a learned society might undertake the excavation, but only in return for a share of any statues and stelae that might be found, and, when the Government is undertaking consolidation, it should preserve as far as possible statues and stelae *in situ*. It would therefore be better for the excavation to be carried out by the Department of Archaeology, and a highly skilled expert would be necessary for the work of consolidation : it might be hoped that the Department of Antiquities in Egypt would second one of their specialists, possible M. E. Baraize, M. H. Chevrier, or M. J-P. Lauer, all of whom have had great experience in this work.

The Meroitic remains, which here replace those of the Classical period in other Near Eastern countries, are next in period of time and of equal importance. They are considerable but are mainly grouped together, thus facilitating the work. During the period when the earlier remains were being consolidated the present policy of underpinning would be sufficient for these, but they should come next in the plan after the Pharaonic, when some of the best preserved pyramids could be throughly restored together with Nagar, and perhaps Massawarāt.

The Christian Churches and Forts are for the most part in a sad state of disrepair and most of the paintings are lost for ever. They are considerable in number, but there is no very great variety, so, when their turn came, two might be chosen for restoration or at least consolidation and protection. Among the Islamic remains, there are few of artistic merit, but one or two forts and Qubbahs could be restored without great expense. Such remains of the early occupation as present historical interest appear to be already cared for, and the same applies to the Mahdia.

With energy, an adequate grant, and an early start, such a programme should be completed in ten years. The most difficult part would be the consolidation of Sulb temple, and if expert supervision were obtained for this, a younger man, trained during the course of the work, should be able alone to deal with the other tasks.

But it is useless to consolidate monuments unless they are protected. The vandal is now probably less of a danger here than almost anywhere in the Near East, but the Sudan has an enemy, almost unknown in Egypt on account of her protective cliffs,—the sand, which erodes the poor quality Nubian sandstone at an alarming rate. To protect the monuments from this is almost as important as to consolidate them, and in some places may be all that is necessary. For this purpose, it is suggested that 'sand-groynes' be constructed, and in the Appendix to this note the suggestion is elaborated.

A proper estimate of the time and cost of completing such a programme could only be made after a survey by a qualified person, but the following may serve as a very rough indication of what the plan might entail.

YEAR	SITES	COST £E.	NOTES
1	Sulb	8,000	Includes seconded personnel, initial equipment, and excavations.
2	The same	7,500	Seconded personnel, excavations and sand-groyne (*see* Appendix).
3	The same	4,500	Above items concluded
4	Semnah and perhaps Gebel Barkal pyramids	4,500	
5–7	Ancient Meroe area ..	13,500	
8–9	Christian and Islamic monuments	8,000	Little or no ashlar masonry needed.
10	Repair and protection of minor monuments ..	4,000	
	Total	50,000	

There may be many who will say that this is too much to spend on antiquities, and that the money should be used for productive work. This is an understandable opinion, to which two answers may be made. Man cannot live by bread alone, and an appreciation of its past is essential to the growth of a nation. Secondly, the disappearance of some monuments and the dilapidation of others are due to their being quarried in the past to build economically for productive schemes. Much of that debt can never be repaid, some of it should be.

APPENDIX

SAND GROYNES

The name Sand Groyne has been chosen to describe an angular construction, designed to direct the sand flow each side of the monument which it protects.

A number of our monuments lie on the edge of the Libyan desert, where they are subject to the full blast of the northerly sandstorms. In reply to a query as to whether a V-shaped wall, pointed into the prevalent wind, would serve to divert the sand each side of it, Brig. Bagnold replied :—

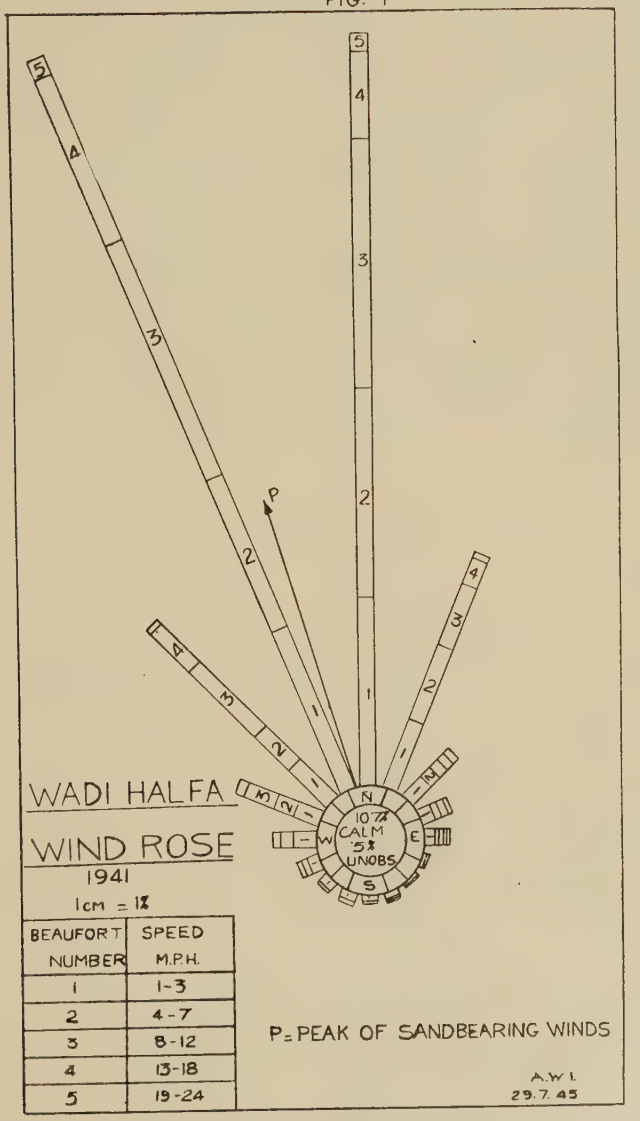
" With regard to your problem, the first point to be clear on is the direction from which the storm winds blow which do the damage. If these blow from one fixed direction, the apex of the V-shaped wall would be pointed in that direction. Then if the walls were inclined at, say, 45° to this direction, the wind would keep them clear of sand. But, if you were to get a *succession*[1] of sand-driving winds from a direction, say, 20° different, sand would pile up against one wall.

" To get the true prevailing direction of sand driving from meteorological records, the strength v and the duration t should be taken over a long period of time for each point of the compass in turn. Then find for each direction the total summation of $(v-V)^3t$, where V is the wind speed, as measured at any height, which is just capable of driving sand. At a height of 1 metre it is 14 miles an hour. If these summations are then laid off on a polar diagram round the compass—provided sufficient wind records are available, you will be in a position to make your designs. If the resulting 'wind-rose' goes out to a nice sharp point in one direction, and if the apex of the walls are pointed in this direction, they should not become choked with sand. Otherwise it would

[1] Italics mine.

be best to build a circular wall and to hold up the oncoming sand outside it—well away from it in order to leave room for a large accumulation—with hurdles or fences.

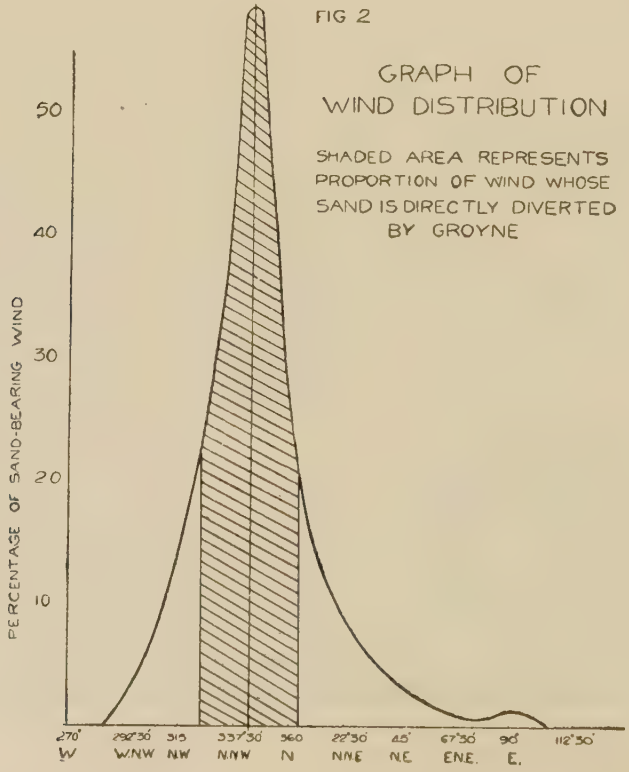
FIG. 1



" Walls projecting 4 to 5 ft. high above a horizontal floor should be enough, but if sand does accumulate at the wall's foot, some of the

height will of course be lost. I should think that a vertical wall without curvature or batter would be best."

Turning to fig. 1, it will be seen that though there are two points to the wind-rose, these are only 22° 30′ apart. The sand-bearing winds are Beaufort No. 4 and above, so it is also clear that more sand is carried by N.N.W. winds than by N. winds, and again that more is brought by the N.W. wind than by the N.N.E. wind, and so on. Sand-bearing winds represent 15.7% of the total. Converting the fractions at the various points of the compass into percentages of the total sand-bearing winds, we get :- W — O, WNW — 2.23, NW — 14.0, NNW — 46,20, N — 24.20, NNE — 7.96, NE — 3.18, ENE — 0.96, E — 1.27. If a graph then be made (fig. 2) with these percentages as ordinates and the points of the compass as abscissae, and the asymmetric portion of the figure representing the minor peak on the east be ignored (since no amount of swinging the point of the groyne will have any effect against winds from this direction), the remainder of the figure is bisected by a line cutting the abscissae at 344° to the nearest degree. This then represents the peak of the sand-bearing winds.



From the same graph it is possible to see, by the rather primitive method of counting squares, that 68% of the borne sand will be within 20° of the peak, and will therefore be carried past, 15% will be to west of it, and 17% to the east, including the easterly minor peak. These figures are within 2% of those obtained by taking the two main arms of the wind rose as being within the groyne's diversion area and the rest to either side of it, so the error on them is probably less than the annual variation in wind direction.

It seems improbable that much of the 32% will be carried by successive winds, which would be necessary to pile it against the groyne. The one direction which seems to represent a seasonal change is to the east, and little or no sand will be brought from this direction against monuments lying near the west of the Nile. Inspection of the terrain and damage to monuments might show that for some of them it would be possible to reduce considerably the eastern arm of the groyne, or omit it altogether, and to swing the apex west of 344°, but this cannot be decided away from the sites and will be left out of consideration in the calculations which follow. It is worth bearing in mind as a possible method of saving expense.

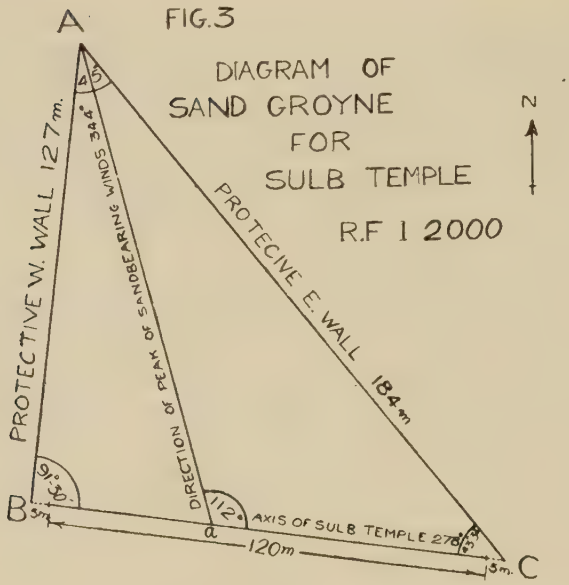
The biggest monument of all, Sulb temple, which is suffering greatly from sand-blast, was planned in 1823 as lying due east and west to magnetic north. If the observation was correct its axis is 278° to the nearest degree.

The total length of the axis is given as 160 m. but the length of remains sufficient to be preserved is 120 m. It seems advisable to bring the ends of the groyne some little distance from the ends of the monument, so as to throw the sand clear, say 5 metres at each end.

Turning then to fig. 3, our problem is to draw a triangle ABC, in which side *a* is 130 m. long and angle BAC is 45°, such that the bisector Aa of angle BAC cuts BC forming angle AaB of 66° (Sixty-six degrees being the difference between the wind peak and the temple axis). By subtraction angle ABC must be 91° 30′ and angle ACB 43° 30′. Then by calculation the two sides AB and AC must be 127 m. and 184 m. respectively.

This gives a total walling of 311 m. which is considerable, but it must be remembered that this is the biggest single monument to be protected in the Sudan, and that it lies almost dead across the wind, making for the maximum wall length.

Taking into account the possibility of some temporary piling up at the groyne base outside, it seems best to make it about 6′ high, and in order to support the possible weight of sand accumulating within it from eddies, it must be two bricks (about 18″) thick.



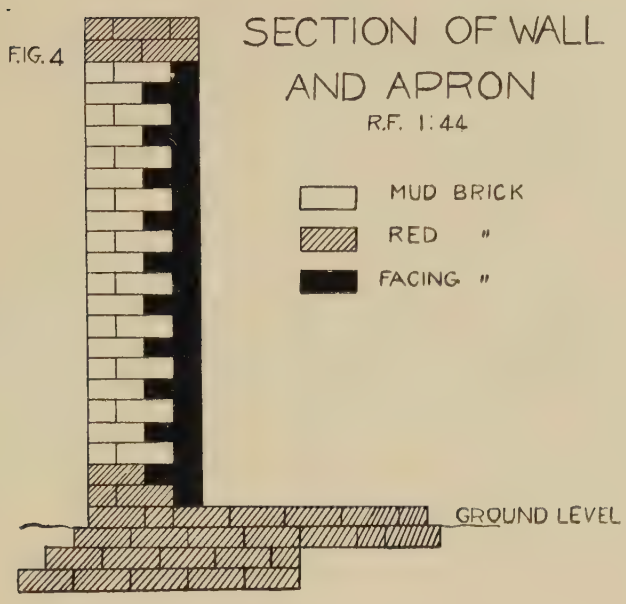
Further to ensure against any permanent accumulation of sand outside, an apron of about 3′ width might be built into the wall, for a hard surface will greatly assist the major winds to blow away any sand piled up by the minor and will allow winds of Beaufort No. 3 to carry it away. (See Bagnold, *The Physics of Blown Sand and Desert Dunes*, London, 1941, p. 72).

To give greater resistance to erosion of the groyne itself it is suggested that the lower 5 ft. of the wall should be faced outside with salt-glazed or sand-cement bricks. The roughness of ordinary burnt brick will probable give the best surface for the apron, and these should be used for the foundations to prevent damage by burrowing animals as well as for the top two courses of capping. In the interests of economy the rest may be mud brick. Fig. 4 is a section of the proposed walling.

In order to construct with bricks of more than one kind, it would be necessary to have purpose-made mud bricks, the same size as the burnt and facing bricks. It is assumed that any difference between the latter two would be negligible and would be taken up in the interstices.

Means of six determinations at the brickfields near Khartum gave the following figures in cm.:—

	length	*width*	*thickness*
Box	23.90 ± 0.07	11.15 ± 0.06	7.98 ± 0.01
Adobe	23.25 ± 0.17	11.25 ± 0.05	7.53 ± 0.01
Burnt	22.06 ± 0.13	10.93 ± 0.06	6.65 ± 0.09



The absence of shrinkage in the width of the adobe is most curious and might be attributable to an inadequate number of observations, were it not that the probable error is less than a half of one per cent. The shrinkage of all hand-made bricks, both burnt and adobe, is very irregular as between the lengths, widths and thicknesses, because a complexity of factors comes into play, so for practical purposes it seems safe to assume that there is no change between the width of the box and the dried mud brick.

Then the box required to make mud bricks the same size as the burnt bricks will be 227 x 109 x 70 mm. to the nearest millimetre.

In order to make salt-glazed bricks it is necessary to have a clay with an alumina/silica ratio of between 1 :4.6 and 1 : 12.5, and not too high a ferric oxide content. The clay at Deim an-Nubāwi, at the north end of Omdurman, which was used in 1927 for brick making at the Moghren brick factory, might be suitable. The washed clay contained 63.1% silica, 22.6% alumina, and 1.4% ferric oxide, and the unwashed material had a small amount of coarse sandy matter which would be advantageous for glazed bricks. The puddle would thus be better used unwashed.

There is some doubt whether a wood-fired kiln would give the necessary temperature of 1200°C (cone 6). Judging by the bricks

produced at present, this temperature is certainly not reached in the ordinary way. Further research is required before it could be decided whether it was worth trying to produce such a brick or not.[1]

It is estimated that, allowing for a 10% loss on all burnt brick and 15% on adobe (which may be a little low for this country), each 6 foot of walling and apron would require 275 facing bricks, 500 burnt bricks, and 450 mud bricks. The total cost of construction of the same length of walling by direct labour is estimated at £E. 5.34 with mud and plain burnt brick only, and £E. 5.78 with sand-cement facing bricks (which are made by Sudan Railways at Atbara). Both figures are exclusive of transport charges, for which accurate figures are not obtainable.

With so many factors uncertain, it is impossible to make a useful estimate for salt-glazed bricks for facing, though it may be mentioned that the cost of the salt for 6′ of walling would be 90 m/ms. (*i.e.* at the rate of 140 lbs. of salt, at 275 m/ms. per cwt., per 1,000 bricks).

The total length of wall needed for Sulb temple is 340 yds., so the cost with sand-cement facing bricks would be £E.983.[2] (If it were found possible to dispense with the East wing, this cost would of course be reduced by more than half, even though the West wing were slightly lengthened).

It would doubtless be wise to test the sand-groyne on a small scale somewhere on the western bank in the Halfa area. At the same time a half-groyne could be tried out near the river bank, where the latter bends westwards.

Sand-groynes might prove suitable for the protection of small patches of cultivation, wells, or buildings, from oncoming dunes. For this purpose the groyne would have to be five or six feet higher at its apex than the highest point of the oncoming dune, though the wings could probably be tailed down towards the base. The construction would have to be solid proportionally to the height of the dunes to be diverted.

[1] The British Refractories Research Association at the Mellor Laboratories, Shelton, Stoke-on-Trent, can supply full details on this point, if supplied with dimensioned sketches of the kiln, showing the arrangement of flues and general construction. Provisionally it may be said that common sea-salt is good enough for the purpose, and that a half to one and a half pounds of salt are required for each cubic foot capacity of the kiln. The salt should not come into direct contact with the bricks. The temperature of the kiln should be at least 1200°C. and the atmosphere strongly oxidizing before the salt is added. The procedure is to introduce the salt at several stages at 20-30 min. intervals. The draught is cut down as much as practical before introducing the salt, and the temperature, which drops considerably after each addition, is restored to 1200°C before further salt is added. Unless the walls of the kiln are of high alumina bricks they will be damaged.

[2] About £E. 285 would have to be added to the figure for transport of facing bricks, but the figure is a very rough one.

Barkhan dunes could perhaps be stopped more simply by tying down their tails with a coating of concrete, for these dunes advance only by the fact that the wind blows their tails over their faces. The length of tail which it would be necessary to bind, would best be established by experiment. This might not stop the dune from growing, but its growth would seldom be a menace if it were bound some little distance from the object it was desired to protect.

Note.—For information and help in the preparation of this note I am indebted to Brig. R. A. Bagnold, F.R.S., Mr. B. Butterworth of the Building Research Station, Watford, Mr. A. W. Ireland, Government Meteorologist, Mr. M. H. Lees, Assistant Director of Works, Musa Eff. Sassoon, Mr. C. T. Serjeant of Sudan Railways, and Mr. R. C. Wakefield, Director of Surveys.

EARLY REFERENCES TO MALARIA NEAR DONGOLA

By D. J. Lewis.

A FEW years ago *Anopheles gambiae*, the most important African malaria-carrying mosquito, spread from the Aswan Reservoir area into the centre of Egypt, causing a severe outbreak of malaria. The mosquito was later exterminated from that country and, early in 1946, was also exterminated in the area of the Sudan between Saras, south of Wadi Halfa, and Faras on the Egyptian border.[1] At present it is not known to occur north of Firka, some 120 kilometres along the river from Faras.

In considering these rapid and extensive changes in the range of this important tropical mosquito one might ask what was its past history in the area, if it has always been there or if it spread recently from much further south. Its past existence in the area can be ascertained both from a few actual records of it and from records of malaria of which *A.gambiae* is the local vector, other species being scarce or absent. An examination of the relevant literature, indicates that malaria has existed for most of the present century on at least parts of the river between Merowe and Faras.[1] In the nineteenth century several travellers alluded to a disease in this area which was probably malaria, Although its identity cannot be proved, their records quoted below are of some interest, both from a historical point of view and because they do suggest that malaria and *A gambiae* have existed in the Dongola area for well over a century.

Burkhardt,[2] who travelled up the Nile in 1813, wrote that a fever (regarded as almost certainly malaria by Bloss[3]), which occurred in epidemic form during the flood, but not every year, and which was often fatal, particularly affected the Dongola area. At the present day malaria has a sporadic occurrence in the district. Burkhardt was driven away from the vicinity of pools at Wadi Sonk (Sonki E.) at night by numbers of biting "gnats." These may have been *A.gambiae* since the other common mosquito, *C.univittatus*, is seldom annoying, and *C.molestus*, a biting species, is local and not common.

[1] Lewis, D. J. (1948). The extermination of *Anopheles gambiae* in the Wadi Halfa area (in the press).

[2] Burkhardt, J. L. (1822). Travels in Nubia by the late John Lewis Burkhardt. Second Ed., 42, 73, 79, 229, London.

[3] Bloss, J. F. E. (1941). Notes on the health of the Sudan prior to the present Government. *Sudan Notes and Records*, 24, 130.

Waddington[1], after reaching Amara on 16th November 1820, wrote of "musquitoes so very active that I was glad to take refuge under my gauze net." Of the south part of Argo Island he wrote: "The last two nights were much colder, which did not prevent the musquitoes from being remarkably active about us. There is a breed peculiar to this country, which is much smaller, and less sonorous, than those whose attention we had been in the habit of receiving." This description suggests *A.gambiae*; *Phlebotomus papatasii* is almost inaudible and the traveller would have encountered it and the other species of mosquitoes in Egypt. At Merowe, on 15th December 1820, after a slow advance from the north: "The army was by no means healthy.... there were.... many sick of disenteries and intermittent fevers.... their bark was so deficient in quantity, or in quality, that the Protomedico [asked].... Mr. Hanbury for a little of his *China famosa*, though we had scarcely enough left between us to cure one tertian, should any one of the party be unhappily so visited" (the word "quinine" is derived from *china*, the Peruvian for bark, the drug being prepared from the bark of a certain tree). Of Dongola, reached on the return journey on 2nd January, Waddington wrote: "The plain is very low here and symptoms of inundation are visible at nearly two miles from the river. There are several large holes, whence the mud was taken to build the town, and which are now filled with stagnant water. Some marshy ground near assists in accounting for an intermittent fever which generally prevails here after the inundation has retired. We found, in consequence, many of the inhabitants and all the soldiers ill." "Bark" was administered to one of the inhabitants, and about this time a member of the party developed fever. Long before the nature and transmission of malaria were understood the disease was known to be often associated with stagnant water. On 5th January Waddington was on Argo Island, of which he wrote: "The western side of Argo is in some places very sandy, and a little within is a great deal of low ground, now full with stagnant water and fishes and waterfowl; all this part of the island is said to be at this season particularly unhealthy." Later, on an island west of Argo (9.1.22), "we had not left ourselves above twenty doses of that necessary medicine ["bark"]. The natives consoled us by the assurance, that, if we remained on this spot [first reached on 3.1.22] only three or four days longer, we should all have intermittent fevers, from which themselves were suffering extremely."

[1] Waddington, G. & Hanbury, B. (1822). Journal of a visit to some parts of Ethiopia, 18, 51, 136, 224, 232, 235, 238, 247, London.

Cailliaud[1] was delayed by "la fièvre" below Argo in December 1821, and wrote of dangerous fevers occurring in the Berber district (south of Abu Hamed) after the rains.

Hoskins,[2] who visited the area in 1833, recorded that at Abu Hamed the malaria, so prevalent upstream during the inundation, was unknown. Dongola, he wrote, was very unhealthy in the rainy season. Further north, at Sulb, he slept out of doors, having no "fogs or damp" to fear.

De Cadalvène and De Breuvery[3] visited Dongola in 1830, where, they said, fevers which were dangerous after the rains in Sennar and Kordofan were neither protracted nor dangerous (Hoskins had previously referred to the prevalence of "ague and intermittent fevers" in Kordofan). They mentioned mosquitoes and a repellent ointment.

After referring to the unhealthy "exhalations of the moist plain" Reclus[4] (*c.* 1885) wrote of the Nubian area (below the R. Atbara junction) where "the inundations of the Nile stretch far into the plains, leaving stagnant pools here and there, malignant fevers are very common and frequently terminate fatally." Most people were said to live "beyond the zone of the marsh fevers." Of Dongola Reclus wrote that a channel of the river "at low water becomes a mere stagnant pool emitting dangerous miasmas."

[1] Cailliaud, F. (1826). Voyage à Merowe...., 365. Paris.
[2] Hoskins, G. A. (1835). Travels in Ethiopia.... 180, 256. London.
[3] De Cadalvène, E. & De Breuvery, J. (1836). L'Egypte et la Turquie de 1829 à 1836. Tome 1 & 2, Egypte et Nubia. Vol. 1, 160, 161, 195. Paris.
[4] Reclus, E. (c. 1885?). The Earth and its inhabitants. The Universal Geography. 10, North-East Africa. Ed. E. A. Keane, 282, 291, 300. London.

A TRIAL ECONOMIC SURVEY OF TWENTY FAMILIES AMONG THE MOROKODU TRIBE OF AMADI DISTRICT, EQUATORIA PROVINCE

By G. R. Staniforth.

THIS trial survey was limited to twenty families of the Morokodu tribe chosen at random in an area of about ten square miles just south of Amadi. It is not claimed that this sample is fully representative and, had it been possible, the survey would have been extended to include the whole of this small tribe. Information was collected on questionnaires (of which a sample is shown) and a check survey of some of the holdings produced answers to the first nine questions reasonably similar to the originals. A Moru-speaking employee was taught to fill in the forms, but it would have been better to have used an investigator who belonged to and was completely accepted by the Morokodu tribe, had a sufficiently intelligent individual been available. The people were highly mistrustful of the enquirer in any question of money and the replies on income and expenditure are considered so untrustworthy that they will not be detailed here.

The measurement of cultivated areas at one time seemed impossible. The best available employees had no idea how to compute areas but an assistant was eventually taught to make rough sketches of the shape of plots, to split them into triangles and to measure the sides of these triangles on the ground by pacing. The writer then had to construct the figures to scale and to calculate the area, assuming 5,000 square paces to the feddan. It would be better, in any future survey, to instruct the surveyor to make tie, as well as construction, measurements in all plots with more than three sides, as these would provide a check on his accuracy. It is often difficult to recognise the exact boundaries of cleared cultivation and plots are of every imaginable shape. Nevertheless, taken as a whole, the figures for cultivated areas are approximately correct. There was no time in this preliminary survey to measure areas under different crops, which are often sown in several places on the holding and sometimes mixed one with another.

For the purpose of computing family strength the individuals at each site were divided into the very young, adolescent, full grown and very old of either sex and, by an arbitrary arrangement, the families were reduced to man-power by disregarding the very young and the very old and by reckoning each woman and adolescent as half a man.

The tabulated summary of results shows that families are of from 2 to 18 persons, with an average strength of 6 or 7 and that there is a dwelling hut for every 2 or 3 people. Most families include 2 or 3 small children. All except two of the families had fishing nets or hooks—the River Yei is nearby. Only two of the families kept a few goats but most of them had between one and twenty head of poultry. The majority owned bee-hives, some possessing as many as ten ; but probably never more than half of these would contain a swarm at any one time. The crops which occupy most of the ground are dura, sesame and ground-nuts ; but cassava, sweet potatoes, hyptis, melons, *bamia*, beans and tobacco are also commonly grown in small patches. Some light is thrown on the rate at which cultivation is shifted by the figures showing the number of years for which the family has occupied the present site, the average length of occupation being 5 years. The most interesting point which emerges is the close correlation between the acreage cultivated and the man-power of families. In nearly all the holdings the area cultivated is approximately one acre to one unit of man-power.

The overall impression gained from a consideration of the results of the survey is one of poverty. Even if two crops are successfully grown during the year on part of the cultivation area and if new land is regularly brought into cultivation, the food grown can suffice for little more than subsistance. Nor is there any cash crop to provide funds for buying extra food or clothes. Honey and beeswax are very unreliable sources of income. Fish provides an important addition to the diet when grain is in shortest supply and the river at its lowest, but livestock can provide only a tiny supplement to food supplies. There is game in the district and all families possess bows and arrows, but the twenty families, between them, claimed to have accounted for no more than two bush rats and four guinea-fowl during the past year.

These scraps of unco-ordinated information are diffidently presented not so much to provide information on economics as to suggest possibilities for better organised enquiries. Medical and nutritional surveys are already being carried out in Equatoria and very interesting results might be obtained if they could be carried out in conjunction with an agricultural-economic survey.

QUESTIONNAIRE.

1. How many people are there in the family ?

   Very old men Very old women Men Women

   Very small boys Very small girls Youths Maidens

2. How many buildings are there ? .....

   Dwelling houses ..... Grain stores .....

3. How many bee-hives are there ? .....

4. How many fishing nets ..... or hooks ..... are there ?

5. How many goats or sheep ? .....

6. How many head of poultry ? .....

7. What game was killed last year ? .....

8. How long has the family lived here ? .....

9. How much money did the family receive last year ? .....

   (*a*) From wages .....

   (*b*) From the sale of honey ..... Fish .....

   Beeswax ..... Poultry ..... Pepper .....

   Eggs ..... Dura ..... Beer .....

   Tobacco ..... Others .....

10. How much money did the family spend last year ? .....

    On clothes ..... Food ..... Tobacco .....

    Beer ..... Marriage ..... Tools .....

    Anything else .....

SUMMARY OF RESULTS.

Family No	Total No. of persons	No. of smal children	Strength in man equivalents	Acreage cultivated	No. of years in present site	No. of dwelling houses	No. of grain stores	No. of bechives	No. of head or poultry
1	5	—	2	2.2	1	2	1	—	8
2	10	5	4	3.0	17	5	8	—	20
3	10	3	4½	3.2	6	3	3	8	7
4	7	3	2½	3.0	9	3	5	2	6
5	8	3	3	4.6	3	3	2	—	12
6	3	—	2½	3.7	9	3	2	3	2
7	18	8	6½	5.2	3	6	9	3	6
8	6	2	3	2.6	4	2	1	6	—
9	2	—	1½	2.1	1	2	2	5	10
10	5	2	2	0.8	2	1	—	—	—
11	7	2	2	3.2	1	3	2	2	—
12	2	—	1½	1.7	2	2	2	4	1
13	8	2	3	4.7	2	3	2	10	7
14	2	—	1½	1.6	2	2	2	—	3
15	6	2	2	1.5	6	3	—	6	4
16	7	2	2	2.3	4	4	3	10	4
17	8	2	5½	6.0	11	3	3	2	4
18	6	—	3½	3.0	3	3	1	2	—
19	5	—	1½	1.8	15	3	1	—	6
20	7	3	2	3.5	4	3	1	5	20
Average	7	2	3	3.0	5	3	2½	3	6

ADULT EDUCATION AMONGST COUNTRY WOMEN : AN EXPERIMENT AT UMM GERR

By G. E. Richards.

THE island of Umm Gerr, situated on the White Nile about 145 road miles south of Khartoum, contains a large pump scheme whose function is to supply alternative livelihood to some of the semi-nomadic tribesmen whose vital grazing grounds are now flooded by the Jebel Aulia Reservoir. The problems of helping former nomads to adapt themselves to a sedentary mode of life were attacked by the adult education staff of the Institute of Education at Bakht el Ruda during the war years with slow but encouraging results. The following note is an account of recent work on the women's slide.

Work amongst the women was started by Sitt Dar-el-Gelaal, who is a trained teacher and midwife, and myself in September 1945. We started by regularly visiting 12 of the 19 villages on the island. These twelve villages were inside the area of the Pump Scheme. The villagers had built themselves mud houses to live in, and were rather more settled than in the remaining six villages where the people lived in grass huts or tents and were still largely semi-nomadic.

First Lessons.

At each visit we held a meeting lasting some two to three hours in the most suitable house in the village, usually that of a sheikh or *murshid* (village guide). Our main aim was to get to know the women, and be known amongst them, to become familiar with their ways of living, beliefs and customs, to discuss with them their problems, and so find out what were their most urgent needs. Immediately we started these meetings most of the women asked to be taught to sew ; we made them provide their own materials, needles and cotton, or alternatively buy them from us, and then helped them to make embroidered cloths, sheets, *tagias* (caps), *tobes* (outer garments), and in some cases other garments. After a few weeks at least 80% of the women attending the meetings were learning to sew, and we insisted that the remainder brought with them their own handwork such as *zaf* (fibre) work, *birsh* (mat)-making or wool-spinning, so that no person would be sitting idle. During the meeting we promoted discussion on the value of cleanliness, the causes, prevention and cures of the more common diseases, the

importances of diet and good cooking, the value of schools, use of dispensaries and midwives. In addition we sold quantities of soap.

These meetings continued with fair regularity for eighteen months. What were the results? There was definite improvement in the personal cleanliness of the women attending the meetings, which was to some extent reflected in their houses: through these rather domestic meetings we had encouraged the women to take a pride in the appearance of themselves and their houses, and they had responded to this encouragement. Apparently we were working on the right lines and must develop the work.

Second Stage of the Work.

It was not practicable to try and extend the scope of each meeting; not only could we not spend sufficient time in each village, but the monotony of repeating one lesson twelve consecutive times was too much to contemplate. We therefore selected four villages in which the women were rather more advanced, we planned to spend three days a month in each giving a class lasting from about 9 a.m. until after lunch; each class to be composed of about fifteen women selected from the village in which the class was being held and from villages nearby. The work of the class was divided into two parts:—

1. *Needlework.* Up to this point the women had only been accustomed to hemming and embroidering: we had done all the necessary cutting out and tacking up, and now we had to teach the women to do these for themselves. This was the first time that the women had used a pair of scissors and a pencil. They were easy to teach and quick to learn. The first garment they made was an apron, which on finishing, they wore during the cookery lesson, and then a pair of knickers, a petticoat, and a frock. Each woman paid the cost price for her garment.

2. *Cookery.*—The common diet of the people was *lugma* (millet porridge) or *kisra* (millet bread), with only *rob* (sour milk) or *um rigeiga*, yet there were quite a variety of vegetables and salads grown on the island, and most villagers owned a vegetable plot. The most urgent need then, was to teach the women how to use these vegetables and salads. The cookery lesson took the form of the preparation of the lunch by the class and we stressed the need for variety in the diet and the importance of cleanliness in preparation. Proper cleaning of pots, pans, other utensils, and cloths immediately after use was carefully supervised. We taught some twentyseven different dishes which

included three sweets. Each member of the class paid 1 P.T. towards the cost of the meal, and took her turn in bringing *kisra* ; the remainder of the cost was met by a grant from the Rural District budget, and a small grant from the Tenants' Welfare Fund.

Results.

We have just finished a series of these classes spread over a period of eighteen months. The enthusiasm of the members of the classes showed that they felt that they were learning things which were of value to them and proved to us that we were still working on the right lines. Evidence that they were putting into practice in the homes some of the things they had learned came from reports from the husbands of the better cooking in the home, and continued improvement in the cleanliness of the women. Indirect evidence of our teaching and contact is that the women are more ready to use Government midwives, the dispensaries, go to the Dueim hospital, send their children to school, use the wells in the villages and generally make greater use of the social services provided for their own benefit.

Future plans.

We have been working amongst the women, and have opened a school for girls over seven years old. But what about that very greatly neglected section of the population, children from the age of fourteen days to school age ? Miss Hegan, a qualified Health Visitor, was appointed last January specially to advise on and work out plans for the Child Welfare aspect of the work. Up till now she has spent her time becoming familiar with, and getting known amongst, the women of Um Gerr, and now with Sitt Um-El-Hassen she will spend until next April working out a programme with a particular emphasis on Child Welfare. During this time it is hoped that Sitt Um-el-Hassen will take part in the Mass Literacy Campaign, and begin literacy classes for the women who are now more than ready to learn.[1]

On September 24th[2] Sitt Dar-el-Galaal and myself hope to start the first course of training of mistresses for the extension of Adult Education work in other areas : the course will last three months and there will be four members. These members will be school teachers who have a special interest in work amongst rural communities.

[1] Since this article was written a literacy campaign of the each-one-teach-one type has been started in three villages with very encouraging response from men and women. *Ed.*

[2] Written in 1948. *Ed.*

PHILOSOPHICAL SOCIETY OF THE SUDAN.

REPORT UPON THE 1946/7 AND 1947/8 SESSIONS.

1. Formation.

The Society was founded early in 1946, its objects, as defined in its constitution, being :—

> " To promote discussion, exchange of views, and research in moral, political, and natural philosophy, by holding meetings for the reading of lectures and original papers, and by any other means, such as co-operation with other societies with similar objects, that the Committee may from time to time approve."

The Sudan is developing rapidly and the need for the Society had become increasingly apparent during recent years. Although foreign publications and societies necessarily remain the principal media for the dissemination of information concerning specialised research in the Sudan, the Society provides a medium for less specialised research of primarily local interest. It also facilitates co-operation between workers in different fields and is a means whereby the intelligent layman can keep abreast of developments.

The inaugural meeting was held on February 2nd, 1946 and seventy five persons became founder-members. The following officers and committee were elected :—

President	A. J. Arkell
Vice-President....	G. Andrew
Secretary	G. W. Ogden
Asst. Secretary...	A. W. Ireland
Treasurer	G. C. Wood

Committee :

Dr. I. M. Beasley	Dr. N. L. Corkill
Dr. R. L. Knight	Dr. E. S. Horgan
G. M. Hancock	J. S. Owen

At the first Annual General Meeting held on 12th November, 1946 the same officers and committee were re-elected except that Dr. B. M.

Boyns and S. G. Assabgy were elected to fill two vacancies on the Committee created by the retirement of Dr. N. L. Corkill and G. M. Hancock.

At the second Annual General Meeting held on 13th January, 1948 the following officers and committee were elected :—

President.....	Dr. J. Smith
Vice-President....	G. W. Ogden
Secretary.....	A. N. Ireland
Asst. Secretary...	L. S. Cobley
Treasurer	G. C. Wood

Committee :

G. Andrew	S. G. Assabgy
Dr. I. M. Beasley	Dr. B. M. Boyns
Dr. R. L. Knight	P. L. Shinnie

2. Programme.

The Programme for 1946/7 and 1947/8 comprised twenty one lectures and four field days.

1st. Meeting	Speaker ;	A. J. Arkell
26th February, 1946	Subject :	*Some suggestions for lines of research in the Sudan.*
2nd. Meeting	Speaker :	M. Shebeika
26th March, 1946	Subject :	*A Sudan historical manuscript.*
3rd. Meeting	Speaker :	Dr. J. D. Tothill
23rd April, 1946	Subject :	*The origin of the Gezira soil.*
4th. Meeting	Speaker :	G. W. Ogden
28th May, 1946	Subject :	*The relationship between frequency and speed of transport.*
5th. Meeting	Speaker :	Dr. I. M. Beasley
24th September, 1946	Subject :	*Light reading in the middle ages.*

6th. Meeting	Speaker :	Dr. J. Smith
22nd October, 1946	Subject :	*The distribution of tree species in the Sudan in relation to moisture and soil texture.*
7th. Meeting	Speaker :	R. L. Hill
26th November, 1946	Subject :	*The structure of the Turkish administration in the Sudan,* 1823-1837.
8th. Meeting	Speaker :	O. W. Snow
17th December, 1946	Subject :	*Some problems in agricultural research.*
9th. Meeting	Speaker :	Dr. Dows Dunham
21st December, 1946	Subject :	*The history of the Sudan from* 800 *B.C. to* 350 *A.D. as disclosed by Dr. Reisner's excavations.*
10th. Meeting	Speaker :	R. J. Hillard
28th January, 1947	Subject :	*Welfare and development.*
11th. Meeting	Speaker :	S/Ldr. A. T. Mathews
25th February, 1947	Subject ,	*Objective type examinations—Their features, advantages and analysis.*
12th. Meeting	Speaker '	Dr. J. B. Hutchinson
25th March, 1947	Subject :	*Evolution.*
13th. Meeting	Speaker :	Professor J. B. Stebbing
9th April, 1947	Subject :	*The encouragement of forestry research in the Sudan.*
14th. Meeting	Speaker :	A. J. Arkell
29th April, 1947	Subject :	*Some results of the excavation of an early site in Khartoum.*
15th. Meeting	Speaker :	J. L. Lishman
25th November, 1947	Subject :	*Some economic considerations concerning the development of communications in the Sudan.*
1st. Field Day	Leader :	Dr. R. L. Knight
27th November, 1947		Shambat Research Farm.

16th. Meeting 23rd December, 1947	Speaker : Subject :	Dr. E. S. Horgan *Medicine and surgery in the most ancient east.*
2nd. Field Day 8th January, 1948	Leader :	A. J. Arkell Khor Abu Anga
17th. Meeting 27th January, 1948	Speaker : Subject :	A. W. Ireland *Climate and building design.*
3rd. Field Day 8th January, 1948	Leader :	E. J. N. Wallis The Omdurman Battlefield.
18th. Meeting 24th February, 1948	Speaker : Subject :	G. C. Scott *Intelligence testing in the Sudan.*
4th. Field Day 13th March, 1948	Leader :	G. W. Ogden Khartoum Automatic Telephone Exchange.
19th. Meeting 23rd March, 1948	Speaker : Subject :	H. A. W. Morrice *The development of road communications in the Sudan.*
20th. Meeting 27th April, 1948	Speaker : Subject :	R. L. Hill *The Turks as a ruling class in the Sudan.*

3. Publication.

It is intended that the Proceedings of the Society shall eventually be published in a permanent form, but this is not, under present circumstances, possible. Meanwhile multigraphed abridged Proceedings, containing abstracts of papers delivered, are published annually, and selected papers are submitted by the Society for publication in full in *Sudan Notes and Records*. A limited number of copies of the abridged Proceedings is available for sale to non-members at P.T. 25 (5/-) per copy and may be ordered from the Hon. Secretary, Philosophical Society of the Sudan, c/o. General Post Office, Khartoum.

The thanks of the Society are due to the Editorial Committee of *Sudan Notes and Records* for its co-operation in the matter of publication and particularly for making space available for this and subsequent reports.

RECENT BOOKS AND ARTICLES OF INTEREST TO SUDAN READERS

Reference to these lists will be found in the Editorial Notes.

This list does not include books already reviewed in this Journal, nor does it include the numerous text books published by the Education Department.

All books etc. are published in London unless otherwise stated.

BOOKS & MONOGRAPHS.

1942.

La Vie dans les Deserts : Kacharov D. N. & Korovino E.P. Edition Française par Th. Monod. Payot, Paris.

1944/45.

Geological Investigation of the Alluvial Valley of the Lower Mississippi River.

A Laboratory Study of the Meandering of Alluvial Rivers. Two studies published by the Mississippi River Commission, of great interest in relation to the development of the Blue and White Niles and of the Sudan plains.

Some Aspects of Marriage and Family amongst the Nuer : Evans Pritchard E. E. Rhodes Livingstone Institute, N. Rhodesia 1945. 2/-.

The Sudan : *the Road Ahead.* Fabian Publications. 1/-

1946.

Agricultural Development of the Middle East : Keen B. A.

Middle East Science : Worthington E.B.

Rural Education and Welfare in the Middle East : Allen H. B. H. M. Stationery Office, London.

Valuable reports to the wartime Middle East Supply Centre by well-known experts, containing material about the Sudan.

The Feeding of Sudanese Infants : Corkhill N. L. Khartoum, McCorquodale, for Sudan Medical Service. English 10 P.T., Arabic 5 P.T.

An Arab Tells his Story : Atiyah E. Murray. 12/6.

Remiscences by a well-known former Sudan Government official.

Survey of the Anglo-Egyptian Sudan 1898-1944 : K. D. D. Henderson. Longmans. 1/-

The Anglo-Egyptian Sudan : British Survey No. 34.

1947.

The Sudan : *a Record of Progress* 1898-1947. Sudan Government. -/6.

101 *Facts about the Sudan.* Public Relations Office, Khartoum.

Two booklets issued under official auspices describing conditions and developments in the Sudan.

The Hand of God in the Sudan: Revell F. H. New York & London. Describes the work of the Sudan Interior Mission.

Le Soudan Egyptien 1821-1898: Sabry M. Cairo, Imprimérie Nationale.

Cultural Survey of Modern Egypt: Mosharrafa M. M. Longmans. 2/6.

Egypt: an Economic and Social Analysis: Issawi C. Oxford U.P.

The Awakening of Modern Egypt: Rifaat Bey. Longmans. 15/-

Three important books on social and economic conditions in modern Egypt.

The Naturalist's Handbook (A Collector's Guide): Legge M. M. Longmans. 2/-

A re-issue in English of a booklet originally compiled for Sudan schools in Arabic.

Fi Tariq el Hurriya (On the Road to Freedom): Ali Rifai el Ansari. Cairo, el Akha Press. P.T. 24.

Describes the issues between England and Egypt, including the Sudan question.

La Civilisation du Desert: Montagne R. Paris, Hachette. Frs. 210. An analysis of nomad Arab culture and social organisation in Africa and Arabia.

Poultry Keeping in the Sudan. Phillips T. H. Khartoum, McCorquodale. P.T. 15.

Constitutions, Electoral Laws and Treaties of States in the Near and Middle East: Davis H. M. Duke Univ. Press, Durham, N. C.

Contains the principal agreements between England and Egypt, including those on the Sudan.

Proceedings of the Northern Sudan Advisory Council: 6th Session January 1947; 7th Session May 1947. Khartoum, Sudan Government.

Report of the Sudan Administration Conference to the Governor General: March 1947. Khartoum, Sudan Government.

Annual Report on the Administration, Finances and Condition of the Sudan for 1945. Khartoum, Sudan Government. P.T. 10.

Geological Map of the Anglo-Egyptian Sudan 1/4,000,000.—(Provisional Edition). Khartoum, Geological Survey. P.T. 50.

1948.

Alam al Jaish w'al Bahriya fi Misr ithna' al Qarn al Tasi Ashara (Leading Egyptian naval and military personalities in XIX Century. —In Arabic). Abdel Rahman Zaki. Cairo, Al Risala Press. Biographical Notes dealing with many officers who served in the Sudan.

What Shall I Say ? : Earl G. F. Longmans. 2/-
From C.M.S. in Southern Sudan. Hints to African teachers.

The Fate of Italy's Colonies : Fabian Colonial Bureau. 2/6
Proposes handing over part of Eritrea to the Sudan.

Sudan Almanac 1948. Khartoum, Sudan Government. P.T. 7
Reappears after a lapse of six years in an expanded form, giving much more general information and statistics.

Land Usage in the Sudan in its relation to a Nigerian Mechanised Groundnut Scheme : Weatherhead A. T. and Baker O. W. H. Nigerian Government.
Report on the principles of the Gezira Scheme in connection with development plans for Nigeria.

Gordon Memorial College Calendar 1948. (English and Arabic Editions). Khartoum. P.T. 25 or 4/-.
The first Calendar to be issued by the new University College of the Sudan, giving full information about staff, courses, regulations, etc.

Monographs of the Ethnographical Museum of Sweden : *No.* 20 *Nose Ornaments in Africa. No.* 21 *Tubular Smoking Pipes especially in Africa.* Lindblom K. G. Stockholm 1945 and 1948. Kr. 4 each.

Classification of the Bantu Languages : Guthrie M. Oxford Univ. Press for the International African Institute. 8/6.
While of great importance in its sphere, this monograpph does not directly touch the Sudan.

Problems of African Development: *II Government and People* : Batten T. R. Oxford. 3/6.
The first part was reviewed in *S.N. & R.* XXIX Part 1. This volume deals with health, education and government.

The Government of Ethiopia : Perham M. Faber. 30/-
Contains references to relations with the Sudan.

Proceedings of the Northern Sudan Advisory Council : 8th (last) Session. March 1948. Khartoum, Sudan Government.

Verbatim Records of the Anglo-Egyptian Dispute heard before the Security Council 1947. (English and Arabic). Khartoum, Sudan Government. P.T. 5.

Annual Report on the Finances, Administration and Condition of the Sudan for 1946 : Khartoum, Sudan Government.

ARTICLES.

Shilluk Luo Tribes in the Bahr el Ghazal : Santandrea S. Anthropos Tome XXXVII/XL 1942-45.

The Luo of the Bahr el Ghazal: Santandrea S. Annali Lateranensi Vol. VIII 1945.

Acconciatura e Vestiario dei Koma al Confine Etiopico-Sudanese: Grottanelli V. L. Annali Lateranensi Vol. IX 1945.

Nutrition of the African in Tsetse-fly Areas (in Southern Sudan): Woodman H. M. E. African Medical Journal, Sept. 1947.

Early Khartoum: Arkell A. J. Antiquity no. 84, Dec. 1947.

On the Value of Iron among the Nuer: Howell P. P. Man, Oct. 1947.

Nuer Modes of Address: Evans Pritchard E. E. Uganda Journal Vol. XII Part 2, Sept. 1948.

Fashoda: Kennedy A. L. Quarterly Review, April 1948.

Jute for the Sudan: Great Britain and the East, Jan. 1948.

Deraheib Gold Mines: Newbold Sir D. (the late). Antiquity No. 84, March 1947.

People without a History: Crawford O. G. S. Antiquity No. 85, March 1948.

Discusses excavation of early mound sites in the Sudan and urges work on riverain sites in preference to further Egyptological researches at present.

The Sudan Publications Bureau: Hodgkin R. A. Overseas Education, April 1948.

Economic and Social Development in the Sudan: (anonymous). Overseas Education, July 1948.

Note: Articles purely on the political situation are not included.

BOOK REVIEWS

GRAMMATICHETTA GIUR. Father Stefano Santandrea, F.d.S.C. Missioni Africane Verona. 1946. pp. 142.

This is the first grammar of any size (after excepting Ghawi's cyclostyled "First Steps in Jur") on "*Dhe Luo*," the language of the so-called "Jur," a small Nilotic tribe in the Bahr el Ghazal. In spite of strong cultural pressure from the surrounding Dinka and later official discouragement in linguistic matters, the "Jur" have preserved their Shilluk-like language and blacksmith traditions in a surprisingly compact form. This grammar will be of great use, both to those missionaries who work through the medium of the vernacular, and for historico-linguistic investigators tracing the course of the Shilluk migrations.

The book is divided into two parts :

1.—*Nozioni elementari.*

This part is disappointing from a person of Fr. Santandrea's language ability. He has set his chapters out in the best traditions of Italian school grammars, and tried to render Jur in terms of European grammatical concepts. Consequently, under headings like "Congiuntivo," "Condizionale," "Gerundio," "Participio," etc., we are too often told "Propriamente parlando non esiste in Jur," and then are told what the Jur do say in order to translate an Italian conditional mood, etc. This part also suffers from peculiar gaps, *e.g.*, the section on "Il Possessivo" deals throughout with 1st. person possession only.

2.—*Note sulla construzione jur e varie.*

Here the author throws off the chains of convention and sets out those elements in Luo grammar which do not fit in to the old pattern. This section is the really valuable one and gives us an idea of what the language is really like. I am interested in that he discards the Kohnen-Pschorrn thesis (expressed in their Shilluk grammars) of there being a passive voice and maintains the theses of reversible subject and object, *e.g.*, "I kill the man" as against "The man kill I" (My own Dinka experience started with this thesis and proceeded to that of the Passive Voice !).

The book ends with some annotated folk tales and a small Jur-Italian vocabulary.

Fr. Santandrea is a phonetician of no mean standing in the Sudan and the accuracy of his recording is a foregone conclusion. He has also, from time to time, introduced tone marks and given us glimpses of the tonal grammar of the language. (His list of tonal doublets on pp. 92-103 is particularly enlightening). It is therefore all the more unfortunate that he has refrained from tone marking all his material, and I hope that this omission will be rectified in future works from his pen.

A. N. TUCKER,

THE CHRISTIAN APPROACH TO ISLAM IN THE SUDAN: J. Spencer Trimmingham, *Oxford Univ. Press*, 1948. 3/6.

To a narrow administrator, most missionary activity appears misguided, unrealistic and even harmful; the strict evangelist, on the other hand, is puzzled and distressed by the way in which Christian officials seem to betray their faith in their works. The recent history of the Sudan has produced a situation where this divergence of views is at a maximum. Dr. Trimmingham naturally takes his stand with the missionaries. But his book is written from a broad viewpoint and is, in general, a fair review of a complex problem. To Christians in the Sudan who are not missionaries it presents a number of often evaded challenges. It also expresses with admirable clarity a point of view which must be common to many missionaries.

The book falls roughly into two parts. There is a useful and impartial history of mission activity in the Sudan, followed by a sketch of their present activities and problems. The second half of the book is entitled " The challenge of the present opportunity." Various attitudes of missionaries to Islam are analysed. The crude tactics of direct controversy and attack are dismissed; so also is the " leavening approach " which tries to build on the fact that Islam already accepts the *nabi 'Isa*. " Veneration of 'Isa as a prophet is no means for his enrichment as the eternal Christ "; the two concepts are irreconcilable. The concentration of missionaries on good works is regarded as an interim compromise. The way out, according to Dr. Trimmingham, is mainly through the development of a truly African church. He does not rely much on the hope that Western missionaries can effect direct changes in the hearts of Moslem Sudanese. He does, however, see considerable hope in the up-surge of Christian Africans from pagan regions of the South. This is a novel and interesting theme which, despite its apparent unlikelihood,

is not without historical precedent. It is far less outrageous than Toynbee's bold suggestion that the salvation of the U.S.A. may come from the negroes.

The book, perhaps inevitably, suggests more questions than it can answer. Probably its greatest service, both to missionaries and officials, is to raise one corner of the cauldron lid, and let us glimpse the brew of spiritual and social conflicts which we are all helping to cook. It is a clear, provocative book, and a good *aperitif* for Dr. Trimmingham's major study of Islam in the Sudan, which is to appear soon.

R. A. HODGKIN.

CORRESPONDENCE

The Editor *Sudan Notes and Records.*

Dear Sir,

In the footnote No. 39 in the article "Some ancient records of Kordofan" *S. N. & R.* XXVIII p. 22, you ask if the centurion's description could have applied to the Sobat.

A few miles east of Gambeila where the Baro (as the Sobat is here called) debouches from the mountains it passes over a series of impressive rocky rapids which amount almost to a waterfall. Navigation is quite impossible.

But I doubt very much if the centurion's description could have applied to the Sobat. Although it floods out over immense areas of swamp both north and south between Nasir and Jokau from June to November, it is always a clearly defined river with no *sudd* blocks. Moreover there is no papyrus grass in this area and ambatch-canoes are rarely seen.

I feel at this stage of their journey the centurions must have repeated the traditional tale about the source of the Nile without having seen the two rocks.

Yours truly,

F. D. CORFIELD.

Malakal.

Museums in Khartoum

Khartoum Antiquities Museum

This contains objects from the earliest times to the Fung period. It lies on the river front to the west of the Gordon College. Two piastres is charged for admission. Troops in uniform are admitted free. Open every day from 9 a.m. to 1 p.m. and from 3 p.m. to 6 p.m.

Natural History Museum

This is an annexe to the above and contains mainly ornithological exhibits.

Khalifa's House Museum, Omdurman

This contains objects from the Turkia and Mahdia periods. It is close to the Mahdi's tomb. Entrance is the same as for the Antiquities Museum.

The Commissioner for Archaelogy (Mr. P. L. Shinnie), whose office is at the Khartoum Museum (Phone **2809**), welcomes enquiries about any of the above museums (except Natural History). Enquiries about the Natural History Museum should be addressed to The Curator, Natural History Museum (Mr. J. W. Cowland), Research Division, Agriculture and Forests, Wad Medani, or to his representative in Khartoum, The Entomologist, Khartoum North.

There are also small museums of Antiquities at Merowe, Suakin, Wadi Halfa and Port Sudan.

Geological Museum.

On the river front between the Public Works Dept. and the Sudan Club.

Open daily.

Graphic Museum (Medical and Public Health).

Adjacent to the Civil Hospital facing the railway station.

Open daily.

Zoological Gardens.

On the river front near the Grand Hotel.

Open daily.